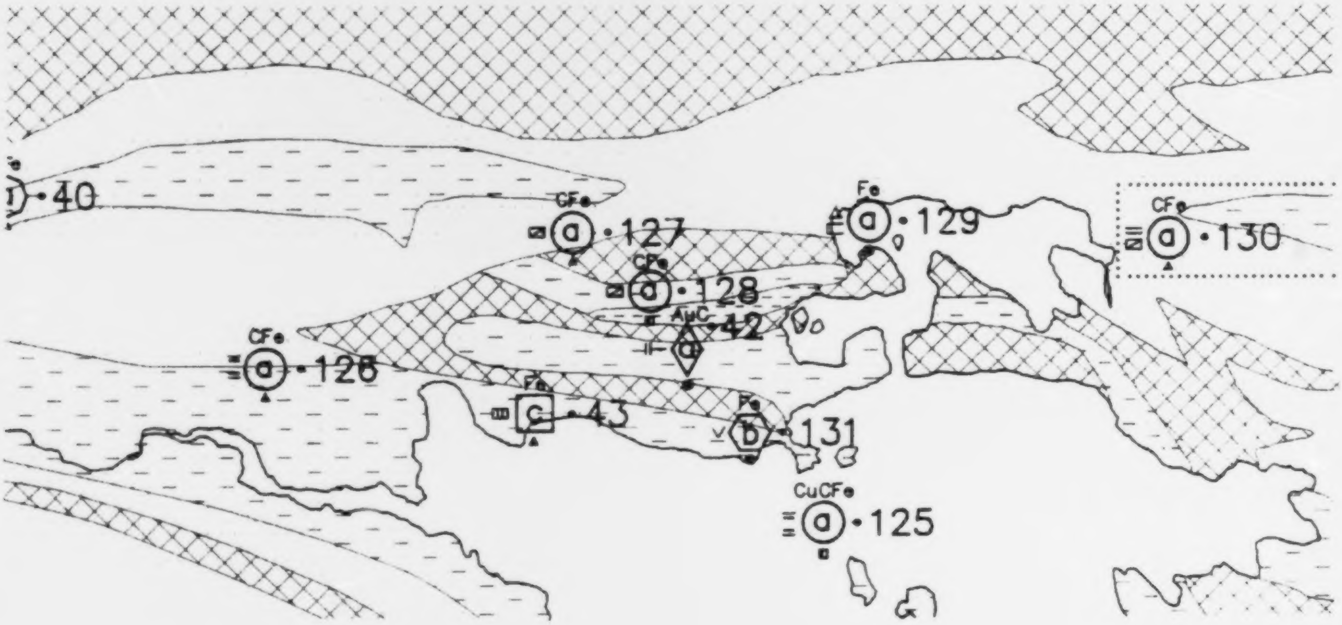
Mineral Deposit Series Report No. 30



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Mineral Deposits and Occurrences in the Elbow Lake Area, Manitoba, NTS 63K15

by T.H. Heine

2003

Manitoba

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Mineral Deposit Series Report No. 30

Mineral Deposits and Occurrences in the Elbow Lake Area, Manitoba, NTS 63K15

by T. H. Heine, Regional Geologist
Flin Flon, Manitoba, 2003

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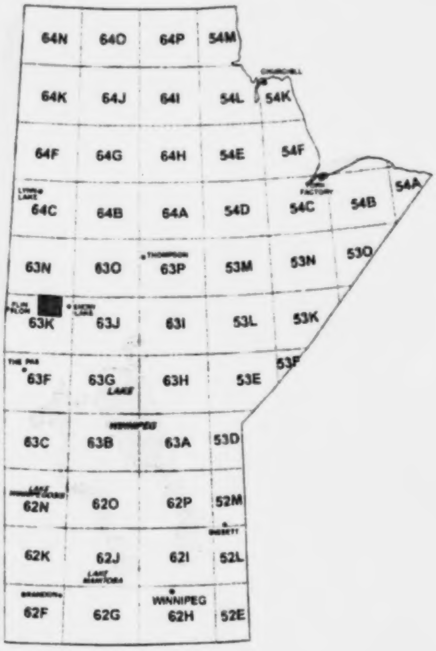
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INTRODUCTION

This report and accompanying maps are part of a Mineral Deposit Series presenting a uniformly organized and up-to-date collation and analysis of information on mineral occurrences in the Province of Manitoba. The series is intended: (1) to provide explorationists with a geoscientific database that can be used in mineral exploration; and (2) to provide a technical database for government use in resource evaluations, formulation of mineral and land use policies and the initiation of regional development programs.

Methodology

The documentation program was initiated in the main mining districts of the province under the 1984-1989 Canada-Manitoba Mineral Development Agreement. Under this project, mineral deposit geologists of the Manitoba Geological Survey have attempted to inspect and evaluate each known mineral occurrence. These site visits ranged from a preliminary half-day or less search of an area for old workings, to extensive geological mapping of selected occurrences for a week or more. In addition, for each occurrence the geologists have attempted to synthesize available data from published and unpublished sources. The Manitoba Mineral Inventory Card Index and the cancelled assessment files have been used extensively in the preparation of this report. Mineral occurrence documentations representing only cancelled assessment file compilations are identified as such under the heading 'Name'. Information for all other occurrences was acquired primarily by field examination supplemented by cancelled assessment file compilations.

The locations of all mineral deposits and occurrences are presented in Figure 1.

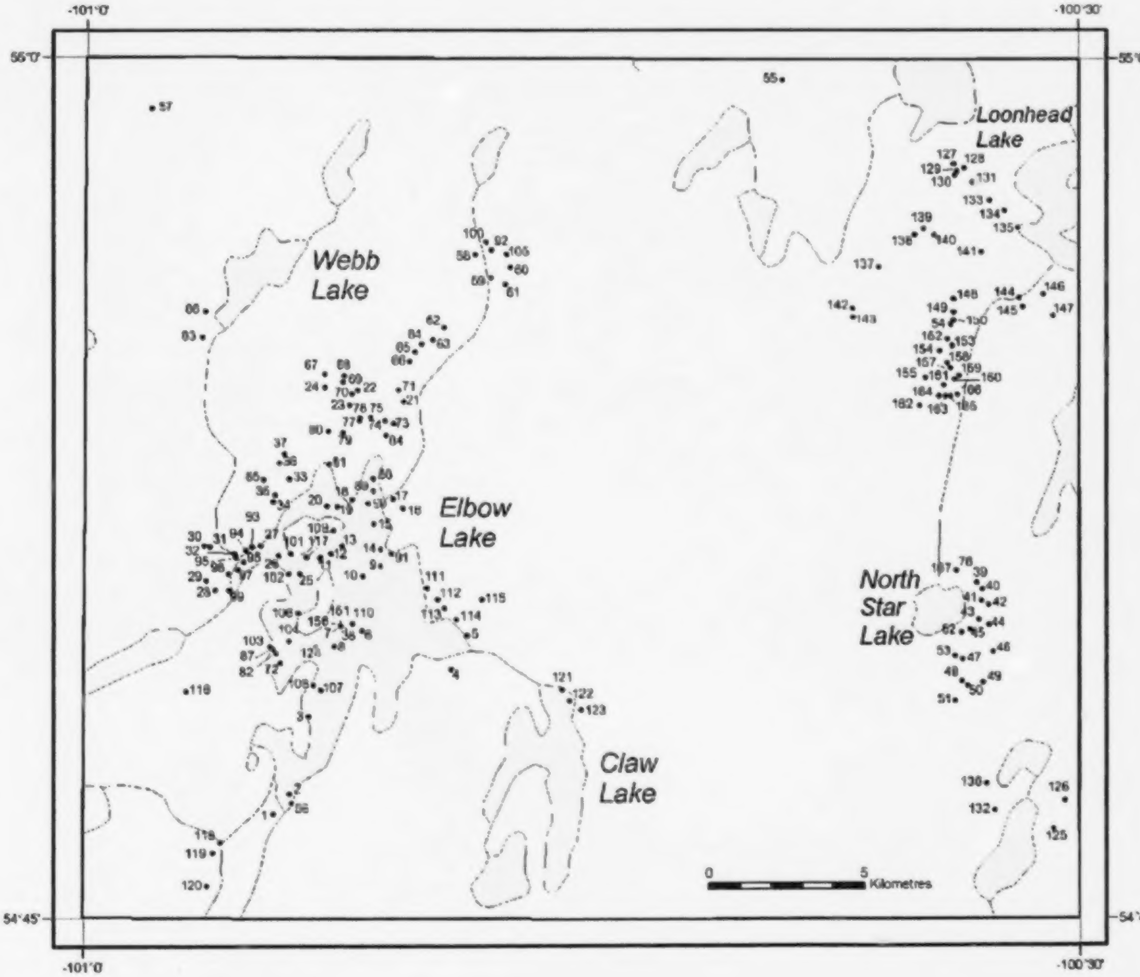

Figure 1: Location of mineral deposits and occurrences (63K/15).

Deposit versus occurrence

Throughout this report mineralization is referred to as a deposit if tonnage and grade figures are known; all other mineralization is referred to as an occurrence.

Massive sulphide versus solid sulphide

The use of 'massive sulphide' in the geological literature is confusing in that it is not always clear whether the authors are referring to a 'massive sulphide deposit' (cf. Sangster, 1972) or a section of sulphide-rich rock. In this publication 'massive sulphide' will be used in reference to a deposit type, i.e., a volcanogenic massive sulphide deposit type, rather than the nature of the mineralization. A volcanogenic or sedimentogenic massive sulphide deposit can contain a sulphide lens that locally contains as little as 10% sulphide minerals by volume. The alteration zones that are an integral part of many massive sulphide deposits rarely contain more than 50% sulphide minerals. Consequently, the use of 'solid sulphide' for 75% to 100% and 'near solid sulphide' for 50% to 75% sulphide minerals is adopted in place of the commonly used term 'massive' to describe the quantitative aspects of the sulphide mineralization.

Format of Mineral Deposit Maps

Location

One of the incentives spurring mineral deposit documentation was the absence of accurate location maps for known mineral occurrences. Inaccurate land bases have previously resulted in failure to find old workings, surveys conducted in wrong areas, and even cancellation of intended surveys by explorationists. Consequently, considerable field time has been spent in establishing occurrence locations and attempts have been made to display exact locations to within approximately 10 metres both on the maps and in the report.

The location number on the map is a unique reference number that will be used both in the report and the geologists' unpublished database. Where the volume of occurrence/deposit data within a 1:50 000 NTS map sheet is large enough to be more efficiently presented by dividing the map sheet in half or into quadrants (cf. Map MDS87-1, NTS 63K13 SE), reference numbers will be consecutive only within the individual map sheet. Where the density of data warrants the publication of a 1:10 000 map sheet, location numbers are consecutive within each 1:50 000 area.

Deposit types

In order to maintain a mineral deposit classification, which will be useful to both explorationists and metallogeneticists, a simplified descriptive classification was selected. This classification is based on the use of common deposit types for the classification of both deposits and occurrences. The classification of mineralization is based on the premise that the mineral explorationist requires information on metals and types of mineralization in an area as well as on the economic deposits (past and present producers).

All deposits and occurrences are classified according to the deposit type classification in Table 1.

The deposit type displayed on the map represents mineralization with the greatest economic potential, e.g., a disseminated narrow chalcopyrite layer is emphasized over a much thicker solid pyrite-graphite layer.

Mineralization

A symbol is used to denote the percentage and/or type of mineralization present. At some localities more than one type of mineralization is present. The type of mineralization displayed in the symbol represents the mineralization with the greatest economic potential as indicated by the deposit type symbol. It should be noted that, in the context of this report, a "sulphide facies iron formation" is equivalent to a "sulphide stratum". For a discussion of sulphide stratum the reader is referred to Gale et al. (1980).

Some occurrences have a significant strike extent or occur as an area of mineralization. An example of the former case would be a sulphide layer that is the cause of an EM conductor. In these cases the location of the occurrence is indicated in the central part of the conductive response. Separate conductive responses, where they have been proven to be associated with sulphide mineralization, are indicated as separate occurrences.

TABLE 1: MINERAL DEPOSIT TYPES

STRATABOUND MASSIVE SULPHIDE TYPE DEPOSITS
  - a) Volcanic rock associated
  - b) Sedimentary rock associated
  - c) Alteration zone associated with a or b

CHEMICAL SEDIMENT-TYPE DEPOSITS
  - a) Sulphide facies iron formation
  - b) Oxide facies iron formation
  - c) Carbonate facies iron formation
  - d) Silicate facies iron formation
  - e) Other chemical sediments

VEIN-TYPE DEPOSITS
  - a) Single vein
  - b) Multiple veins or lenses
  - c) Stockwork

MAGMATOGENIC-TYPE DEPOSITS ASSOCIATED WITH MAFIC/ULTRAMAFIC ROCKS
  - a) Disseminated
  - b) Layered
  - c) Net textured
  - d) Podiform

DEPOSITS WITH PORPHYRY AFFINITIES

PEGMATITE-TYPE DEPOSITS

CLASTIC SEDIMENT-TYPE DEPOSITS

REPLACEMENT-TYPE DEPOSIT

DISSEMINATED MINERALIZATION - NOT CLASSIFIED

Host rocks

In general, this description refers to the immediately underlying and overlying rock types. When a number of rock types are present in an extensive zone of mineralization, the most common rock types are indicated.

Elements

This description allows for a maximum of three metals present in increasing order of abundance by volume. The precious and base metals are indicated in preference to elements such as iron and carbon.

Format of Mineral Deposit Reports

Location

Each deposit or occurrence description will contain the unique reference number, deposit or claim name where applicable, UTM coordinates (NAD83, zone 14), general area description, the reference number of the airphoto on which the deposit can be located and a brief description of method(s) of access.

Exploration summary

This section provides a summary of the extent of exploration and was compiled from Mineral Inventory Cards, cancelled assessment files, and maps and files from the Mining Recording Office.

Geological setting

In this section the general geology of a deposit or occurrence is described. The information levels of the descriptions vary considerably and depend largely upon the extent of geological mapping during the documentation project. For further details the reader should consult the references cited.

In this report, volcanic and sedimentary rock names are used rather than metamorphic equivalents in order to simplify and clarify the descriptions of the occurrence rock types. All supracrustal units have been metamorphosed to at least greenschist grade.

Mineralization

A detailed description of the mineralization provides readers with the opportunity to make their own evaluation of the significance of a mineral occurrence or deposit.

Geochemical data

Most geochemical data included in this report are summarized from assays listed in drill logs submitted to fulfill assessment requirements. In addition, samples collected for geochemical analysis from site visits are described in this section.

Classification

In this section the geologist may indicate the reasons for the classification appearing on the mineral deposit maps. For those localities containing more than one deposit type, the deposit types not shown on the maps are documented here.

References

These include both published and unpublished sources. For published and assessment report information the reader should obtain the desired material directly from the source. The mineral deposit geologists will endeavor to supply copies of unpublished material on a deposit by deposit basis.

References listed at the end of each occurrence description may also include sources of additional information not directly cited in the text.

Abbreviations

The following abbreviations are used throughout the occurrence descriptions:

AEM	airborne electromagnetic
A.F.	assessment file(s)
AFMAG	audiofrequency magnetic
AMAG	airborne magnetic
apy	arsenopyrite
Ag	silver
Au	gold
bn	bornite
cm	centimetre
c	carbonatized
Cd	cadmium
Co	cobalt
conc	concentration
cp	chalcopyrite
Cu	copper
DDH	diamond-drill hole(s)
EM	electromagnetic
fsh	fuchsite
g/t	grams per tonne
hem	hematite
HLEM	horizontal loop electromagnetic
if	iron formation
m	metre
MAG	magnetic
MDS	Mineral Deposit Series
mb	molybdenite
Mo	molybdenum
Ni	nickel
ns	near solid
oz./ton	ounces per ton
Pb	lead
ppb	parts per billion
ppm	parts per million
po	pyrrhotite
py	pyrite
qtz	quartz
shr	sheared
sl	slightly mineralized
to	tourmaline
tr	trace
VL-EM	vertical loop electromagnetic
VLF-EM	very low frequency electromagnetic
wm	well mineralized
Zn	zinc

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Several students provided assistance during the summer field investigations of the occurrences. Rolf Pippert did some of the initial mapping of the North Star Lake gold occurrences. Kyla Arden, Christine Poschadel, Zerai Andegeorgs, and Rebecca Jacksteit provided valuable assistance during the quest for old workings. Rebecca Jacksteit also digitized some of the data included in the cancelled assessment files. David Prouse assisted in the documentation of several occurrences in the Elbow Lake area during the 1992 field season. The manuscript was reviewed by George Gale, Al Bailes and Mark Fedikow who provided valuable comments to improve the text. Bonnie Lenton and Tony Franceschet drafted the final figures for this report. Craig Steffano and Kelly Proutt did the desktop publishing.

NOTE:

This mineral deposit report and the accompanying maps are intended to be active documents that can be updated as new information becomes available. Although revisions of the publication are anticipated, any additional unpublished information may be obtained by contacting the author or the Director, Manitoba Geological Survey.

GEOLOGY OF NTS 63K15

Introduction

Initial investigations in NTS area 63K15 were undertaken by Bruce (1918) with subsequent studies of the geology and mineral deposits by Alcock (1920), Armstrong (1923), Wright (1931), Stockwell (1935), Robertson (1950) and McGlynn (1959). A reconnaissance investigation of the Elbow Lake–Webb Lake area was undertaken by Syme (1978). Galley *et al.* (1987a, b) investigated the metallogeny of the Elbow Lake gold occurrences and published the results in a summary paper (Galley *et al.*, 1989). Nielsen (1992), Ryan and Williams (1993, 1994), Syme (1990, 1991a, b, 1992, 1993), Whalen (1991, 1992, 1993a, b) and Whalen and Hunt (1994) undertook investigations in the Elbow Lake area after a major forest fire in 1989. The till, supracrustal sequence, mineral occurrences and some of the diatremes within the North Star Lake supracrustal assemblage have been investigated by Ayed and Halden (1993), Heine (1993), Heine and Prouse (1992), Prouse and Gale (1993), Nielsen (1992), Norquay *et al.* (1991a, b, c, 1992, 1993a, b, 1994a, b, c), Norquay and Halden (1992), Ostry (1985), Richardson and Ostry (1996) and Trembath *et al.* (1990). The geology of the Webb Lake area has been described by Schledewitz (1990, 1991, 1992, 1993), and Zwanzig (1995, 1996) completed investigations in the Dow Lake–Martell Lake area WNW of Loonhead Lake. The geologic base for the location index map (MDS Map No. 30-1, in pocket) is derived from the 1:100 000 NATMAP Shield Margin Project compilation map of the Flin Flon Belt (NATMAP Shield Margin Working Group, 1998). The NATMAP lithologic classification scheme is used in this report.

Regional setting

Supracrustal rocks of the Elbow Lake area belong to the 1920 to 1880 Ma Amisk collage (Syme *et al.*, 1995; Lucas *et al.*, 1996), formerly termed the Amisk Group. This is a continuation of the sequence that occurs in the Iskwasum Lake area to the south (NTS 63K10) and the Cranberry lakes area to the southwest (NTS 63K11). A second area of supracrustal rocks occurs in the eastern part of this NTS area (63K15), extending northwards from Reed Lake (63K10), through North Star Lake and continuing into the Dow Lake area. Metamorphic grade in the Elbow Lake map area ranges from lower to middle greenschist, to upper amphibolite facies, and generally increases to the north.

Supracrustal rocks

The volcanic rocks of the Elbow Lake area were deposited in three tectonic environments (Syme, 1991a, 1992):

- Ocean floor assemblage basalts (McDougalls Point basalt, Claw Bay basalt and derived tectonite) that were erupted in an immature oceanic rift setting. These rocks dominate the supracrustal assemblage in the Elbow Lake area;
- Arc assemblage (Webb Lake and Tee Lake basalts) similar to the rocks that host the main volcanogenic massive sulphide deposits in Flin Flon;
- Ocean island basalt assemblage (basalt clasts in Long Bay conglomerate) derived by partial melting of mantle in an intra-plate mantle plume setting.

Ocean floor assemblage

The McDougalls Point basalt (unit F1a) extends from the Cranberry lakes NE along the Grass River into Elbow Lake. Primary features such as pillows, flow contacts, amygdules and amoeboid pillow breccia are common, but are destroyed within approximately 300 m of the Elbow [illegible] shear zone (units W6 and W6c). This basalt displays geochemical characteristics of a normal mid-ocean ridge basalt (N-MORB) with a small crustal component. It was most likely erupted in an ensimatic back arc basin (Syme, 1994; Stern *et al.*, 1995a).

The Claw Bay basalt (unit F1b) and derived Centre Lake mafic tectonite (unit W6c) occur in the Claw Bay area SE of Elbow Lake and extend south into NTS 63K10 east of the Elbow Lake shear zone. This basalt also displays N-MORB geochemical characteristics, but is lithologically and geochemically distinct from the McDougalls Point basalt (Syme, 1992, 1994; Stern *et al.*, 1995b).

Arc assemblage

The Tee Lake basalt (unit J1a) appears to represent the lowest stratigraphic unit in the area north of Elbow Lake. This 900 m thick unit consists of NW-trending plagioclase- and pyroxene-phyric basalt flows and flow breccia. It appears to be conformably overlain by the Tee Lake rhyolite.

East of Moen Bay the metavolcanic assemblage consists of plagioclase-phyric and aphyric pillowed basalt, plagioclase-pyroxene-phyric pillowed flows and plagioclase-phyric breccia (unit F1c), the Moen Bay basalt. They are intruded by diabase, plagioclase-phyric diabase, and younger gabbros and ultramafic rocks (units P2a, P2f, P10b). The macroscopic character of these porphyritic basalts are similar to the Tee Lake basalts. This sequence is broken up by a series of NE-trending splays from the Elbow Lake shear zone.

Felsic volcanic rocks form only a small proportion of the supracrustal rocks of the Elbow Lake area and generally have limited areal extent. The Tee Lake rhyolite (unit J4a) is the largest felsic complex in the area. It is approximately 600 m thick north of Webb Island, and extends from west of Moen Bay to Tee Lake in the west. It may extend into the Webb Lake area to the north. The complex is dominated by structureless, massive, aphyric, quartz-phyric and plagioclase-phyric felsic rocks. Iron-oxide stained areas are common in some parts of this sequence, particularly east of Tee Lake. Patches of dark green chlorite (?Mg-chlorite) are a ubiquitous feature.

The Webb Island felsic breccia (unit J7a) is up to 580 m thick on Webb Island and at least 100 m thick west of Long Bay. It is dominated by subangular to subrounded white, sparsely quartz-phyric rhyolite and buff aphyric dacite clasts. Aphyric (?)andesite is a minor component. This sequence represents a subaqueous, possibly reworked, pyroclastic deposit. Its discordance relative to stratification in the underlying Webb Island succession suggests an unconformity between the two units. No structural modification of the contact is evident.

The Century rhyolite (unit J4a) is a 150 m thick, northwest-topping, massive, aphyric flow exposed on the central and eastern part of Webb Island. Contorted flow banding, lobes, hyaloclastite and breccia are locally present.

Tuff, breccia, and dykes form a complex of intermediate to felsic volcaniclastic rocks (units J1a, J4a, J6a) extensively intruded by synvolcanic rhyolite, andesite, basalt and diabase dykes (units P2a, P2f, P10a, J13a) in the bay immediately north of Webb Island. This suite of rocks is generally in fault or intrusive contact with bounding units, but it may overlie the Tee Lake rhyolite. The tuff and breccia intervals contain a variety of intermediate and felsic angular to subangular fragments.

Webb Island basalt (unit J1a) is exposed mainly along the north side of Webb Island, and consists mainly of NE-trending, NW-topping, foliated and commonly strongly flattened aphyric basalt, amoeboid pillow breccia and thin intercalated pillowed flows. Sporadic rafts and enclaves of hornfelsed, black pillowed basalt are tentatively correlated with the Webb Island basalt, and occur as a minor component within the Tee Lake dyke complex (unit J13d) SW of Tee Lake.

No geochemical work has been completed on the volcanic rocks in the Webb Lake area north of Tee Lake, but Schledewitz (1991) indicates that parts of this sequence belong to the Tee Lake complex (Syme, 1991a). If this interpretation is correct, these rocks are part of the arc assemblage (Syme, 1991a, 1992).

Ocean island basalt assemblage

The Long Bay picrite conglomerate (unit F3c) is a coarse clastic assemblage of volcanic conglomerate, pebbly conglomerate and sandstone deposited from subaqueous debris flows (Syme, 1991a). The large clast size and thickness of beds suggests that these represent proximal accumulations (Syme, 1992), although the source of these sediments remains unknown.

Supracrustal rocks of uncertain affinity

The eastern part of NTS 63K15 is underlain by the northerly-trending North Star Lake volcanosedimentary assemblage. The supracrustal sequence in the North Star Lake area has been divided into Western, Central and Eastern zones (Norquay *et al.*, 1993a; 1994a). The geochemical characteristics of this sequence remain to be determined.

The Eastern zone (unit J1d) consists predominantly of massive, pillowed and brecciated basaltic flows and fine- to medium-grained synvolcanic mafic intrusions. A variety of younger intrusions, mainly dykes, form a minor component of this assemblage (Norquay *et al.*, 1993a, b). This volcanic sequence appears to be part of the Fourmile Island assemblage (Syme *et al.*, 1995), deposited in an arc-type tectonic setting. It hosts the Reed Lake (NTS 63K9), Fourmile Island (NTS 63K10) and Dickstone (NTS 63K16) volcanogenic massive sulphide deposits.

The Central zone, which has been described by Norquay *et al.* (1993a, b) as consisting of interlayered amphibolite, quartz-rich amphibolite, psammitic and psammopelitic rocks, layered rhyolitic tuff, lapilli tuff and tuff breccia, mafic flows and chemical sedimentary rocks, is regionally part of a tectonite zone (unit W6b) termed the West Reed–North Star shear zone by the NATMAP Shield Margin Working Group (1998). Primary textures have generally been obliterated in the Central zone due to this strong tectonic overprint, but they remain well preserved within the hinge areas of several folds north of North Star Lake. In the area east and north of North Star Lake, the contact between the Central and Eastern zones is marked by a late brittle structure, Zaks Fault (Norquay *et al.*, 1993a, b).

The Western zone consists of felsic and mafic volcanic and volcaniclastic rocks, felsic intrusions, and diatremes associated with mafic intrusions (units J1d, J1e, J4b). This assemblage has been intruded by younger granodioritic bodies (units P6d, P6f), and is bounded to the west by the Gants Lake batholith (units P7c, P7e).

Intrusive rocks

Intervening intrusive rocks to the supracrustal part of the Flin Flon collage consist of 1876 to 1845 Ma granitoid plutons that form >60% of the belt (Morrison and Whalen, 1995). The major intrusions in NTS 63K15 are shown on MDS Map No. 30-1, -2, and their features summarized in Table 2.

The Gants Lake batholith (units P5a, P6d, P6f, P7a, P7b, P11a) occupies the boundary zone between the Claw Bay basalt ocean floor volcanic assemblage to the west and the Fourmile Island arc-type assemblage to the east. The Loucks Lake shear zone which occurs dominantly within the batholith, may represent the trace of the contact zone between these two diverse supracrustal assemblages.

Structural geology

Structural elements of the Elbow Lake area are summarized in Table 3. The NNE-trending Elbow Lake shear zone (Syme, 1991a, 1992) is the main structural feature in the Elbow Lake area. This up to 3 km wide zone in central Elbow Lake extends NNE along the creek at the head of Moen Bay and SSW along the Grass River outflow from Elbow Lake into Iskwasum Lake (Syme, 1994). The shear splays to the SE in the east central part of Elbow Lake, forming the Claw Bay shear zone, and is

TABLE 2. MAJOR INTRUSIONS OF NTS 63K15 (ELBOW LAKE).

Name	**Age** (Whalen, 1993a; Whalen and Hunt, 1994)	**Petrography** (Bailes, 1980; Syme, 1992; Whalen, 1993a; Morrison and Whalen, 1995; Zwanzig, 1995)
Little Swan Lake pluton	1826±5 Ma	coarse-grained, hornblende-biotite granodiorite, quartz diorite, diorite, gabbro
Big Rat Lake pluton	1845±3 Ma	fine- to medium-grained biotite granite to granodiorite and medium - to coarse-grained, biotite granite to granodiorite
Norris Lake pluton	1845 Ma	diorite, quartz diorite, granodiorite, minor granite
Gauthier Lake pluton	1845 Ma	monzodiorite or quartz monzonite, granodiorite, granite
Echo Lake pluton	1847 Ma	feldspar-amphibole porphyritic and coarse-grained hornblende-biotite granodiorite, melagabbro, diorite, quartz diorite
Elbow Lake tonalite	1864+5/-3 Ma	quartz-biotite porphyritic, biotite±hornblende tonalite
East Elbow Lake tonalite	1864±3Ma	quartz megacrystic tonalite
Gants Lake batholith	1876+7/-6 Ma	plagioclase porphyritic, hornblende-biotite granodiorite; other comagmatic phases coexist
Rail Lake pluton	1860 Ma	mainly tonalitic, quartz and biotite megacrystic, quartz-phyric phases
Claw Lake gabbro complex	1901 Ma	layered series (gabbro, leucogabbro, anorthosite and subordinate pyroxenite, peridotite); younger gabbro series (gabbro, minor peridotite, poikilitic peridotite, pyroxenite)
Webb Lake plutonic complex		mainly tonalitic, texturally diverse, quartz- and biotite-phyric, hydrothermally altered
North Star Lake pluton		medium- to coarse-grained quartz-plagioclase-phyric biotite granodiorite to tonalite, fine-grained biotite felsic aplite
Josland Lake gabbro		layered series (gabbro, ferrogabbro, quartz diorite, tonalite; melanocratic to mesocratic plagioclase-hornblende orthogneiss

NOTE: Units in this table are not in chronological order.

TABLE 3. SUMMARY OF STRUCTURAL ELEMENTS OF THE ELBOW LAKE AREA (from Syme, 1992).

Generation	**Trend**	**Structures, fabrics**
P_1	E	rare refolded, isoclinal F_1 folds, lacking axial planar cleavage, in Long Bay conglomerate
P_2	NW	S_2 foliation in Centre Lake domain (E of Elbow Lake) and Long Bay domain (W of Elbow Lake)
P_3	NNE	S_3 foliation through centre of Elbow Lake, isoclinal upright F3 folds, well developed S3 axial planar foliation, foliation associated with the Elbow Lake shear zone
P_4	NE	open F_4 minor folds refolding S_2 and tectonic lamination in the southern Centre Lake domain, S_4 axial planar foliation, fracture cleavage, quartz-carbonate filled fractures
P_5	NE, NW, N	conjugate late brittle faults

truncated by a brittle fault just SE of Claw Bay (Syme, 1992). It is dominated by mafic phyllonites derived from basalt, but felsic phyllonites are also present. Strain intensity is highly variable within the Elbow Lake shear zone; lens shaped domains of less deformed rock ranging in size from a few centimetres to less than 2 km long are common. The deformation history along this structure is complex (Ryan and Williams, 1993, 1994), but on a broad scale it is a sinistral, transpressive structure. Deformation within the Elbow Lake shear zone has juxtaposed terranes that formed in different tectonic environments. Most of the gold occurrences in the Elbow Lake area are closely associated with this structure.

The Grass River fault is a NE-trending structure up to 230 m wide that parallels the Elbow Lake shear zone in the Grass River inlet area. It may be part of the Cranberry shear zone to the southwest, but continuity between the two faults has not been established; they have been offset approximately 1500 m by a west-trending dextral splay off the Elbow Lake shear zone. The Grass River fault is characterized by felsic mylonites and associated brittle deformation structures such as lens shaped tectonic fragments and open space filling carbonate.

The north-trending, linear Centre Lake fault has been traced for more than 18 km, and cuts both the Elbow Lake tonalite (unit P6a) and the Gants Lake batholith (units P7b, P9b, P9d). In the north it forms a sharp, thin topographic lineament, and in the Claw Lake–Little Claw

Lake area it is a shear zone up to 20 m thick. Kinematic indicators suggest sinistral shear with east side up.

Several NNE-trending faults and shear zones occur in the Claw Lake area. The main one is the Claw Lake shear zone (unit W6c). It is a narrow feature to the north and south, but widens to at least 200 m on central Claw Lake. It cuts the Elbow Lake tonalite in the south, where it is accompanied by intense ductile deformation in the hangingwall (east side). The character of the shear zone is similar to the Elbow Lake shear zone in that it is dominated by mafic phyllonites with abundant intrafolial quartz and carbonate.

The Webb Creek fault is a north-trending curvilinear structure that follows Webb Creek. It truncates the western margin of the Webb Creek tonalite, cuts the Tee Lake dyke complex, and offsets the Webb Island felsic breccia/Long Bay conglomerate contact. Kinematic indicators confirm the sinistral offset along this structure.

The structural features of the North Star Lake area are summarized in Table 4. The sheared Central zone (Norquay *et al.*, 1993a; 1994a) in the North Star Lake area (more or less correlative with the West Reed–North Star shear zone in NTS 63K10 (Syme *et al.*, 1995) and Reed–North Star high strain zone in the NE corner of NTS 63K15 (Zwanzig, 1995, 1996)) is a major structural feature affecting the supracrustal assemblage. This high strain zone displays a strongly attenuated primary stratigraphy, although well preserved primary rock textures have been locally identified within fold hinge areas and a stratigraphic sequence delineated (Norquay *et al.*, 1991a; 1992; 1993a; 1994a).

The north-trending Zaks Fault approximates the eastern boundary of the Central zone to the east and north of North Star Lake. This north-trending, up to 50 m thick, semi-brittle to brittle structure contains fault gouge, crush breccia and rare pseudotachylite. It strikes at a shallow angle to stratigraphy in the Central zone, and progressively truncates successive lithologic units to the north. To the south of North Star Lake, Zaks Fault is hosted by rocks of the Eastern zone. Poorly delineated high strain zones occur for a considerable distance to the east of Zaks Fault. Most of the gold occurrences in the area are located in Eastern zone rocks within 500 m of this break.

The contact between the Flin Flon and Kisseynew belts is exposed in the NE corner of the NTS map area, extending NW from the north side of Loonhead Lake to the north side of Dow Lake in NTS 63N2 (Zwanzig, 1995, 1996). The ENE-dipping Loonhead Lake thrust fault separates rocks of the Amisk Collage from the younger metasedimentary rocks of the Kisseynew belt (Burntwood and Missi suites).

Economic geology

Early interest in mineral deposit potential of the area was sparked by the discovery of lode-type gold occurrences in the Elbow Lake area. Some of the early reports indicated the presence of high gold grades, and shafts were sunk on several prospects, including the Gunwor (occurrence 31), Sherlock (occurrence 32), Webb-Garbutt (occurrence 19), Murray (occurrence 2), Mack (occurrence 17), Hanna (occurrence 9), North Star No. 1 and 2 (occurrence 45), Jupiter No. 2 and 3 (occurrence 49), and Winnipeg-Jupiter No. 7 (occurrence 50). Only the Webb-Garbutt occurrence (Century mine) delineated ore reserves and achieved very limited production. Most of the occurrences are near major shear zones. In the Elbow Lake area, gold prospects occur within and proximal to the Elbow Lake shear zone. The quartz veins also commonly show a close spatial association with chert and cherty iron formation. At North Star Lake, most of the gold occurrences are within approximately 500 m of the West Reed–North Star shear zone.

Subsequent mineral exploration activity focused on the base metal potential of the area. Elbow Lake and surrounding areas were covered by ground EM surveys and many of the conductive responses drill tested. Overall, most of the mineralized intersections proved to be disappointing, consisting of barren sulphides and graphite; however, several significant occurrences that warrant additional work were found.

Significant copper mineralization was intersected in one drillhole along the NE side of Claw Bay at occurrence 114. This mineralization is hosted by ocean floor assemblage Claw Bay basalt (unit F1b), and is proximal to the Claw Bay shear zone.

The Tee Lake area contains arc-related rhyolites and other volcanic rocks. This assemblage forms the largest felsic complex in the Elbow Lake area. The rhyolites east of Tee Lake show extensive chloritic alteration. It remains

TABLE 4. SUMMARY OF STRUCTURAL ELEMENTS OF THE NORTH STAR LAKE AREA (from Norquay et al., 1993a).

Generation	Trend	Structures, fabrics
S_0	N	primary layering in volcaniclastic rocks, volcanic flow contacts
D_1, F_1, S_1		tight to isoclinal, intrafolial folds with well developed axial planar schistosity or spaced cleavage
D_2, F_2, L_2	N	open to tight folds in S_1 with associated S_2 axial planar fracture cleavage on limbs of F_2 structures, S_1 is coplanar with S_2
D_3, F_3, S_3		minor tight shear folds with axial planes similar to F_2, but moderate to steep south plunge
D_4, F_4, S_4		flexure folds with new fabric (S_4) locally developed in micaceous rocks
D_5, F_5	N, NE	semi-brittle shear folds (S-asymmetry) and semi-brittle to brittle faults (eg. Zaks Fault)

unclear if this is related to a sulphide-generating hydrothermal event. Their geochemical similarity to rocks of the Flin Flon area would appear to make them particularly favourable for hosting volcanogenic massive sulphide mineralization (cf. Syme and Bailes, 1993).

Recent work in the Claw Lake area has lead to the discovery of several volcanogenic massive sulphide type base metal occurrences (occurrences 166, 167). Although many of the rock types intersected in the drillholes remain problematic, fragmental rhyolites have been documented that were unexpected in an area mapped as dominantly ocean floor assemblage basalts (Syme and Whalen, 1992).

The Lon zone (occurrence 54) north of North Star Lake is a small copper-zinc deposit hosted by volcanic rocks to the west of the West Reed–North Star shear zone. It has been modified by deformation and its structural characteristics remain to be determined. Fine-grained gahnite ($ZnAl_2O_4$) is widespread within this stratigraphic sequence north of North Star Lake (pers. comm., Don Dudek, 2001), indicating that there was sufficient zinc available in this assemblage to form this spinel group mineral. Gahnite is also present in some of the metamorphosed zinc-copper deposits of the Snow Lake area, particularily those in the Chisel Lake area.

Several mafic/ultramafic intrusions are present in this NTS map-area. The Claw Lake layered gabbro complex is exposed along the west side of Claw Lake, and is intruded to the west by a younger homogeneous gabbro. It consists of modally layered mafic cumulates including gabbro, pyroxenite, peridotite, and anorthosite. Neither the top nor the bottom of the layered series is exposed (Syme, 1992). No investigations to evaluate this differentiated intrusion for its platinum group element (PGE) potential have been undertaken.

Little detail is known about the gabbro SW of Loonhead Lake. Conductive units, most of which contain sulphides, wrap around this intrusion. Neither the sulphide intersections proximal to the gabbro nor the gabbro itself have been evaluated for their PGE potential.

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LOCATION: 1

NAME: Wire
UTM: 377450E, 6072015N
AREA: west side of Grass River near south end of Elbow Lake
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage
AIRPHOTO: MB90025-133

EXPLORATION SUMMARY

The occurrence was originally staked in 1933 by Mr Thomas R. Webb. In 1934 an area with quartz veins in schist was uncovered and a number of pits excavated (Stockwell, 1935). In 1973 Falconbridge Nickel Mines Limited had an airborne EM and magnetometer survey flown in the area (A.F. 91564).

Quartz veins are exposed in several trenches and stripped areas.

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 1-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by schist (units W6 and W6a) of the Elbow Lake shear zone (Galley *et al.*, 1987, 1989; Syme, 1990, 1991, 1992). The shear zone is bounded to the east by the Elbow Lake tonalite (P6A) and to the west by a series of dykes and/or dyke complex (unit P10).

The rocks exposed in outcrop in the vicinity of the trenches are strongly deformed and consist of fine-grained interbanded dark green and light grey weathering schist (Fig. 1-2). The foliation trends 020-035° and has a vertical dip.

MINERALIZATION

The schist contains grey quartz stringers averaging 1 to 2 cm thick and 10 to 20 cm long. Larger irregular discontinuous lenses of milky quartz are exposed in some of the stripped areas. These lenses are generally parallel to the foliation of the schist.

The quartz stringers contain up to 1% euhedral pyrite as crystalline aggregates; some of these are open space fillings. Stockwell (1935) noted the presence of minor galena and chalcopyrite.

GEOCHEMICAL DATA

Stockwell (1935) indicated that the quartz contained gold, but values were not specified.

CLASSIFICATION

Vein type deposit; multiple veins or lenses. The veins have been affected by deformation within the Elbow Lake shear zone: some are folded and boudinaged, and have limited strike length.

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1992: Elbow Lake Project - Part A: Supracrustal rocks; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1992, pp.32-46.

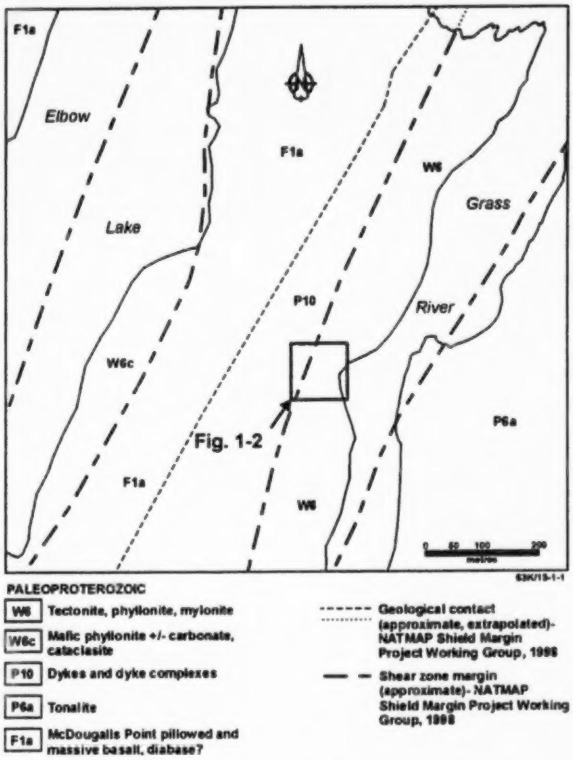
F1a
Elbow
Lake
W6c
F1a
P10
W6
Grass
River
P6a
Fig. 1-2
F1a
W6
0 50 100 200
metres
63K/15-1-1
PALEOPROTEROZOIC
W6 Tectonite, phyllonite, mylonite
W6c Mafic phyllonite +/- carbonate, cataclasite
P10 Dykes and dyke complexes
P6a Tonalite
F1a McDougalls Point pillowed and massive basalt, diabase?
Geological contact (approximate, extrapolated)- NATMAP Shield Margin Project Working Group, 1998
Shear zone margin (approximate)- NATMAP Shield Margin Project Working Group, 1998

Figure 1-1: Geological setting of Wire occurrence.

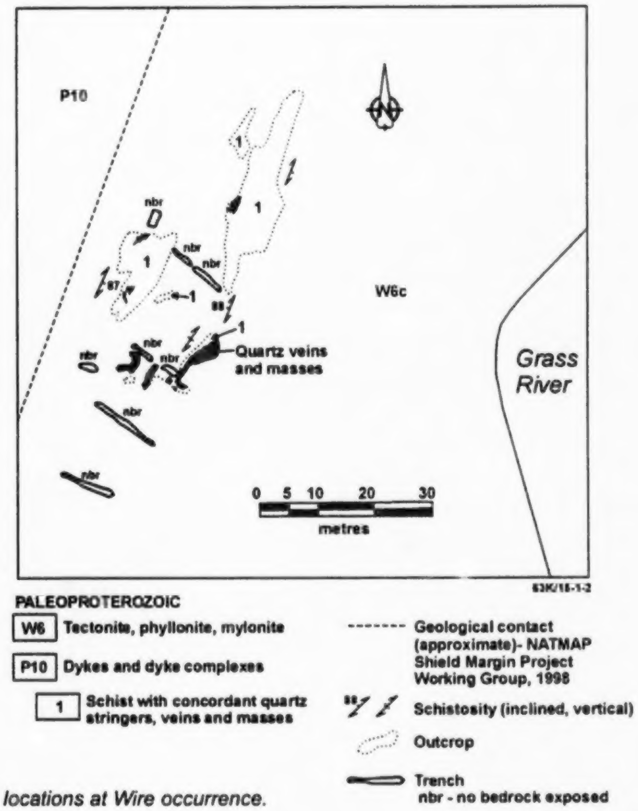
P10
1
nbr
1
87
1
88
1
Quartz veins and masses
W6c
Grass River
0 5 10 20 30
metres
63K/15-1-2
PALEOPROTEROZOIC
W6 Tectonite, phyllonite, mylonite
P10 Dykes and dyke complexes
1 Schist with concordant quartz stringers, veins and masses
Geological contact (approximate)- NATMAP Shield Margin Project Working Group, 1998
88 Schistosity (inclined, vertical)
Outcrop
Trench
nbr - no bedrock exposed

Figure 1-2: Geology and trench locations at Wire occurrence.

LOCATION: 2

NAME: Murray
UTM: 377990E, 6072645N
AREA: east side of Grass River near south end of Elbow Lake
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage
AIRPHOTO: MB90025-123

EXPLORATION SUMMARY

The Murray claim was first recorded in 1921 by Gordon C. Murray. A number of trenches had been excavated by 1922 (Wright, 1930). Two shafts approximately 8 m (25 feet) and 18 m (60 feet) deep and a 15 m (50 feet) adit were subsequently excavated, and a diamond drilling programme was reported to have commenced in 1934 (Stockwell, 1935). In 1973 Falconbridge Nickel Mines Limited had an airborne EM and magnetometer survey flown in the area (A.F. 91564). In 1976 Espina Copper Developments Ltd. optioned the property and carried out a 25 hole drill programme (Mineral Inventory File 781). The results of these drill programmes are not available.

The trenches at this occurrence are largely overgrown and caved and the rock sequence is poorly exposed. The muck piles around the east shaft are mostly overgrown.

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 2-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by schists (unit W6) of the Elbow Lake shear zone and mafic volcanic rocks of the McDougalls Point basalt (unit F1a). These units are bounded to the NNE by fine- to medium-grained diabase, and to the SE by the Elbow Lake tonalite (unit P6a) and South Elbow layered gabbro complex (unit F6a) (Galley *et al.*, 1987, 1989; Syme, 1990, 1991, 1992).

The mineralization is hosted by fine-grained mafic volcanic rocks that are intruded by an 80 m thick fine- to medium-grained quartz porphyritic tonalite dyke (Fig. 2-2). This dyke can be traced for about 100 m along a low ridge. The tonalite is weakly foliated and contains elongate, strongly foliated mafic xenoliths. The wallrock adjacent to the tonalite is strongly foliated at 225° with a steep NW dip, parallel to the fabric in the rocks of the Elbow Lake shear zone.

MINERALIZATION

Several irregular quartz stringers occur in the trenches. The waste piles around the west shaft (Fig. 2-2) contain abundant quartz with up to 5% disseminated pyrite. Galley (field notes, 1987) reported that abundant coarse gold could be found in quartz-rich fly rock around the trenches. Native gold in white quartz was found just south of the adit during the 1993 inspection of the property. The quartz around the west shaft contains minor feldspar, bright green chlorite, carbonate, sericite and tourmaline. Widely spaced quartz-pyrite filled joints are common throughout the area.

GEOCHEMICAL DATA

None.

CLASSIFICATION

Vein type deposit; multiple veins or lenses.

REFERENCES

A.F. 91564; Cancelled Assessment File, Manitoba Industry, Trade and Mines, Minerals Division.

Galley, A.G., Ames, D.E. and Franklin, J.M.

1987: Geological setting of gold mineralization in the Elbow Lake region, Manitoba; in Manitoba Energy and Mines, Minerals Division, Report of Field Activities, 1987, pp.175-177.

1989: Results of studies on the gold metallogeny of the Flin Flon belt; in Investigations by the Geological Survey of Canada in Manitoba and Saskatchewan during the 1984-1989 Mineral Development Agreements, Geological Survey of Canada, Open File 2133, pp.25-32.

Mineral Inventory File No. 781

Manitoba Energy and Mines, Minerals Division

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Stockwell, C.H.

1935:Gold Deposits of the Elbow-Morton Area, Northern Manitoba; Geological Survey of Canada, Memoir 186, 74pp.

Syme, E.C.

1990: Elbow Lake project (part of NTS 63K/15W); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1990, pp.49-57.

1991: Elbow Lake project - Part A: Supracrustal rocks and structural setting; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1991, pp.14-27.

1992: Elbow Lake Project - Part A: Supracrustal rocks; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1992, pp.32-46.

Wright, J.F.

1930: Geology and mineral deposits of part of north-west Manitoba; in Geological Survey of Canada, Summary Report, 1930, Part C, pp.1-124.

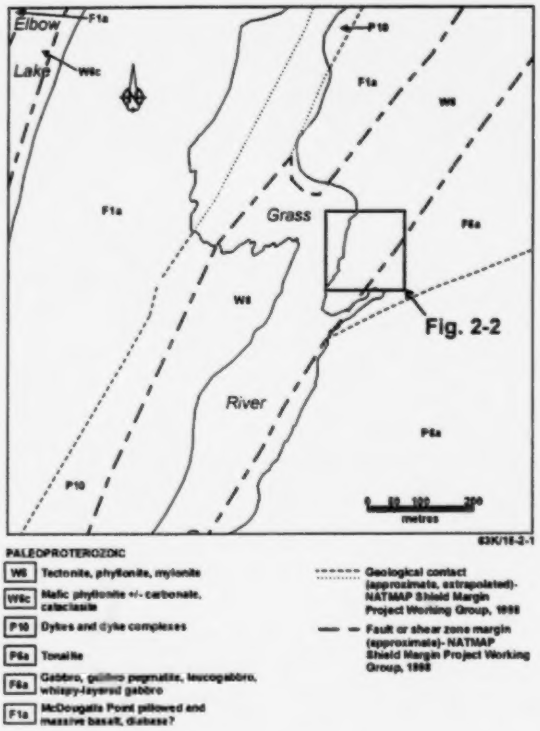
Elbow
Lake
F1a
W6c
P10
F1a
W6
Grass
F6a
W6
Fig. 2-2
River
F6a
P10
0 50 100 200
metres
63K/16-2-1
PALEOPROTEROZOIC
W6 Tectonite, phyllonite, mylonite
W6c Mafic phyllonite +/- carbonate, cataclasite
P10 Dykes and dyke complexes
F6a Tonalite
F6a Gabbro, gabbro pegmatite, leucogabbro, whispy-layered gabbro
F1a McDougalls Point pillowed and massive basalt, diabase?
Geological contact (approximate, extrapolated)- NATMAP Shield Margin Project Working Group, 1998
Fault or shear zone margin (approximate)- NATMAP Shield Margin Project Working Group, 1998

Figure 2-1: Geological setting of Murray occurrence.

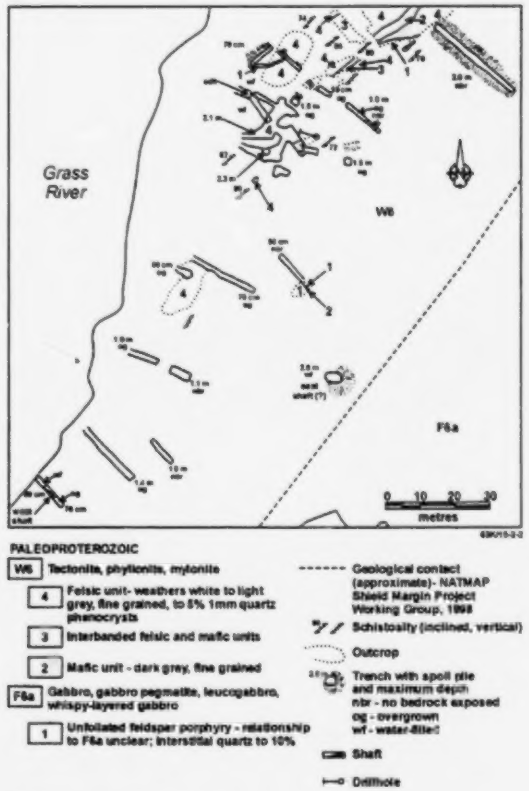
Grass
River
W6
F6a
4
3
2
1
1.4 m
og
1.0 m
nbr
0 10 20 30
metres
63K/16-2-2
PALEOPROTEROZOIC
W6 Tectonite, phyllonite, mylonite
4 Felsic unit- weathers white to light grey, fine grained, to 5% 1mm quartz phenocrysts
3 Interbanded felsic and mafic units
2 Mafic unit - dark grey, fine grained
F6a Gabbro, gabbro pegmatite, leucogabbro, whispy-layered gabbro
1 Unfoliated feldspar porphyry - relationship to F6a unclear; interstitial quartz to 10%
Geological contact (approximate)- NATMAP Shield Margin Project Working Group, 1998
Schistosity (inclined, vertical)
Outcrop
Trench with spoil pile and maximum depth
nbr - no bedrock exposed
og - overgrown
wf - water-filled
Shaft
Drillhole

Figure 2-2: Geology and workings at Murray occurrence.

LOCATION: 3

NAME: Hanson
UTM: 378680E, 6075125N
AREA: small bay on east side of McDougalls Point, south end of Elbow Lake.
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage
AIRPHOTO: MB90025-122

EXPLORATION SUMMARY

This occurrence was staked in 1933 by Mr J. McDougall. A trench was excavated in an area of chlorite and sericite schist (Stockwell, 1935). Several additional trenches have been excavated, apparently subsequent to Stockwell's 1934 visit to the area. In 1973 Falconbridge Nickel Mines Limited had an airborne EM and magnetometer survey flown in the area (A.F. 91564). Homestake Mining and Development drilled the property in 1987 (Mineral Inventory File 774), but results have not been released.

The remains of a stamp mill and roasting kiln are still present at the occurrence. The trenches are mostly caved and/or overgrown and flooded.

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 3-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by schists (units W6c and P11b) of the Elbow Lake shear zone (Galley *et al.*, 1987, 1989; Syme, 1990, 1991, 1992), derived in part from pillowed mafic volcanic rocks. The shear zone is bounded to the east by a quartz diorite intrusion (unit P10a) and to the west by the pillowed and massive aphyric McDougalls Point basalt (unit F1a) (Fig. 3-1).

Galley (field notes, 1987) indicates that the mineralization occurs within an assemblage of mixed felsic and mafic schists, quartz-phyric and aphanitic rhyolite and rhyolite breccia, and mafic lapilli and heterolithic breccia. These rocks are intruded by felsic dykes up to 4 m thick.

The trenches at the occurrence were cut in sericitic and chloritic schists that are part of the Elbow Lake shear zone (Fig. 3-2 and -3). Primary volcanic and depositional textures have been obliterated. Approximately 15 m west of the western series of trenches, pillow selvages are recognizable and outcrop comprises moderately sheared pillowed feldspar-phyric basalt alternating with intensely schistose intervals. The schistosity trends 020° to 025° and dips steeply to the east.

MINERALIZATION

Rocks exposed in the western trenches are weathered and rusty, and much of the schist is calcareous. Narrow (2-4 cm) discontinuous white quartz veins parallel the foliation in the schist. The attenuated, discontinuous character of these veins is related to deformation within the Elbow Lake shear zone. Trace amounts of sphalerite occur within the quartz. Stockwell (1935) indicates that the quartz is mixed with carbonate, feldspar and a bright green phyllosilicate.

GEOCHEMICAL DATA

Grab samples of the quartz and schist are reported by the original owner to have carried from 3.8 to 5.0 g Au/t (0.12 to 0.16 oz. Au/ton) (Stockwell, 1935).

CLASSIFICATION

Vein type deposit; multiple veins or lenses. Mineralization occurs within schists of the Elbow Lake shear zone and proximal to fine-grained felsic dykes.

REFERENCES

A.F. 91564; Cancelled Assessment File, Manitoba Industry, Trade and Mines, Minerals Division.

Galley, A.G., Ames, D.E. and Franklin, J.M.

1987: Geological setting of gold mineralization in the Elbow Lake region, Manitoba; in Manitoba Energy and Mines, Minerals Division, Report of Field Activities, 1987, pp.175-177.

1989: Results of studies on the gold metallogeny of the Flin Flon belt; in Investigations by the Geological Survey of Canada in Manitoba and Saskatchewan during the 1984-1989 Mineral Development Agreements, Geological Survey of Canada, Open File 2133, pp.25-32.

Mineral Inventory File No. 774
Manitoba Energy and Mines, Minerals Division

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Stockwell, C.H.

1935: Gold Deposits of the Elbow-Morton Area, Northern Manitoba; Geological Survey of Canada, Memoir 186, 74pp.

Syme, E.C.

1990: Elbow Lake project (part of NTS 63K/15W); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1990, pp.49-57.

1991: Elbow Lake project - Part A: supracrustal rocks and structural setting; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1991, pp.14-27.

1992: Elbow Lake Project - Part A: Supracrustal rocks; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1992, pp.32-46.

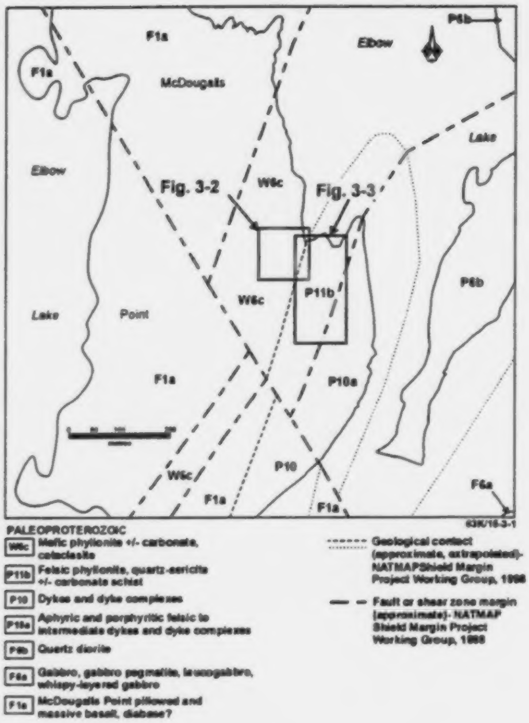
F1a
F6b
Elbow
McDougalls
Lake
Fig. 3-2
W6c
Fig. 3-3
P11b
P6b
Point
F1a
P10a
P10
F6a
63K/16-3-1
PALEOPROTEROZOIC
W6c Mafic phyllonite +/- carbonate, cataclasite
P11b Felsic phyllonite, quartz-sericite +/- carbonate schist
P10 Dykes and dyke complexes
P10a Aphyric and porphyritic felsic to intermediate dykes and dyke complexes
P6b Quartz diorite
F6a Gabbro, gabbro pegmatite, leucogabbro, whispy-layered gabbro
F1a McDougalls Point pillowed and massive basalt, diabase?
Geological contact (approximate, extrapolated)- NATMAPShield Margin Project Working Group, 1998
Fault or shear zone margin (approximate)- NATMAP Shield Margin Project Working Group, 1998

Figure 3-1: Geological setting of Hanson occurrence.

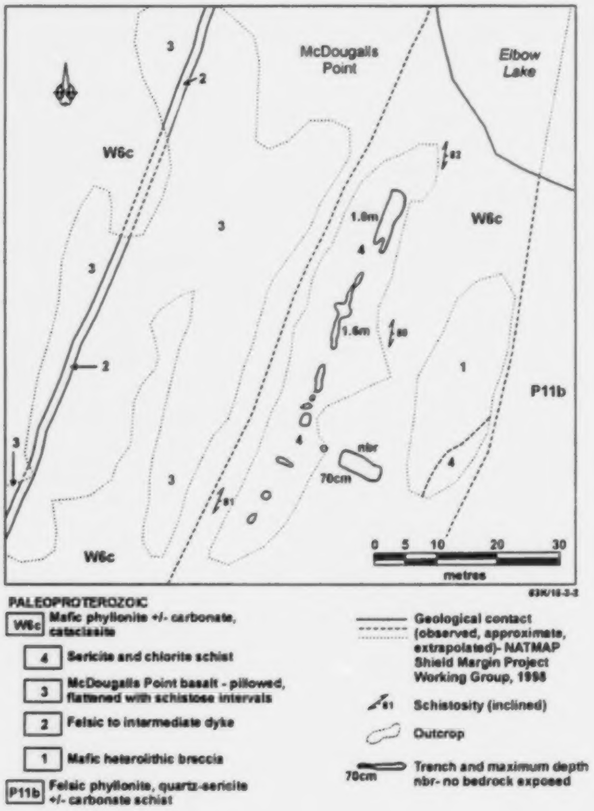
McDougalls Point
Elbow Lake
3
2
W6c
82
1.0m
W6c
3
4
3
1.6m
80
2
1
P11b
3
4
nbr
70cm
3
4
81
W6c
0 5 10 20 30
metres
63K/16-3-2
PALEOPROTEROZOIC
W6c Mafic phyllonite +/- carbonate, cataclasite
4 Sericite and chlorite schist
3 McDougalls Point basalt - pillowed, flattened with schistose intervals
2 Felsic to intermediate dyke
1 Mafic heterolithic breccia
P11b Felsic phyllonite, quartz-sericite +/- carbonate schist
Geological contact (observed, approximate, extrapolated)- NATMAP Shield Margin Project Working Group, 1998
81 Schistosity (inclined)
Outcrop
70cm Trench and maximum depth
nbr- no bedrock exposed

Figure 3-2: Geology and trench locations at Hanson occurrence.

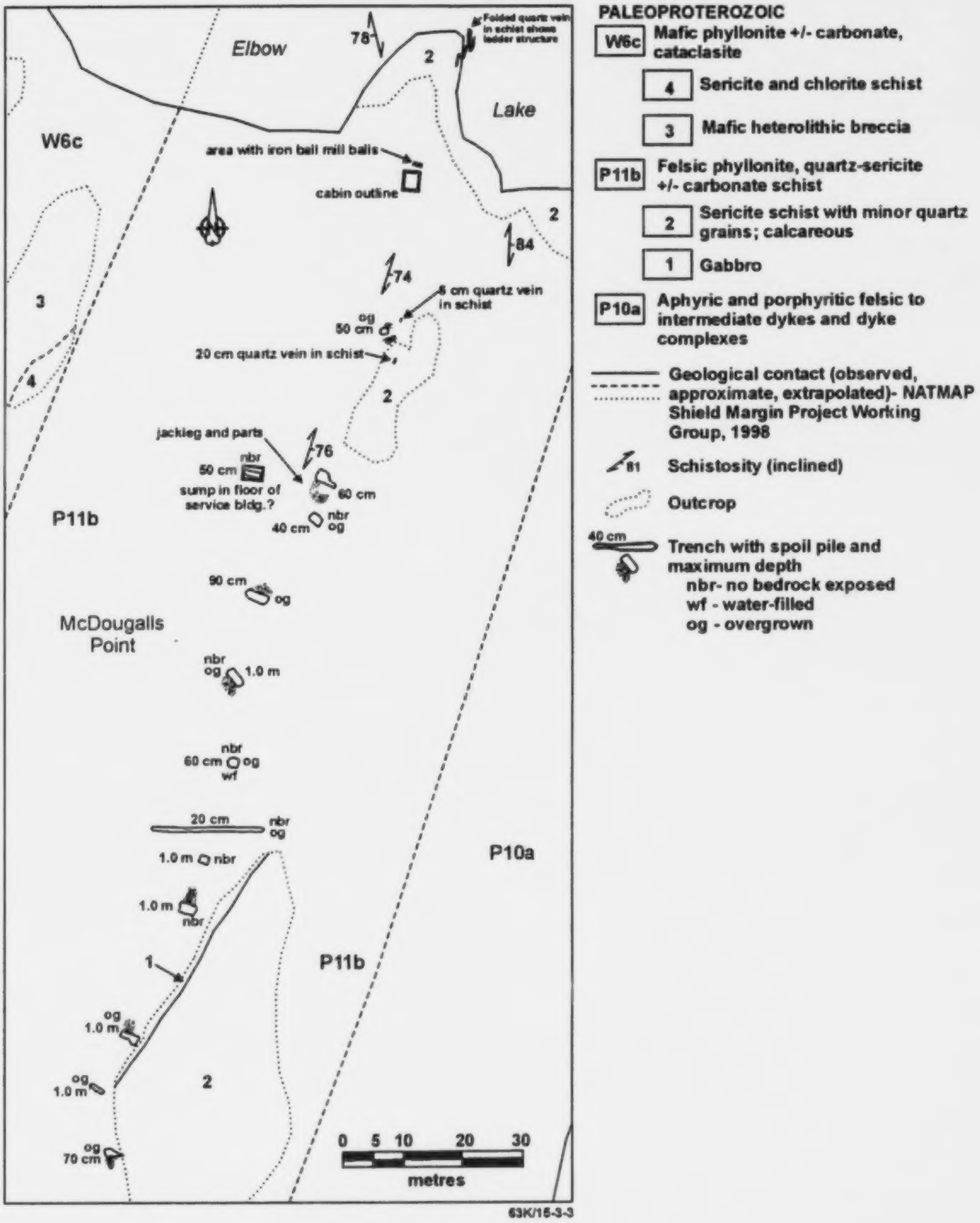
Elbow
Lake
78
2
Folded quartz vein in schist shows ladder structure
W6c
area with iron ball mill balls
cabin outline
2
84
3
74
5 cm quartz vein in schist
og
50 cm
20 cm quartz vein in schist
4
2
jackleg and parts
76
nbr
50 cm
sump in floor of service bldg.?
60 cm
nbr
40 cm
og
P11b
90 cm
og
McDougalls Point
nbr
og
1.0 m
nbr
60 cm
og
wf
20 cm
nbr
og
1.0 m
nbr
P10a
1.0 m
nbr
1
P11b
og
1.0 m
og
1.0 m
2
og
70 cm
0
5
10
20
30
metres
63K/15-3-3
PALEOPROTEROZOIC
W6c
Mafic phyllonite +/- carbonate, cataclasite
4
Sericite and chlorite schist
3
Mafic heterolithic breccia
P11b
Felsic phyllonite, quartz-sericite +/- carbonate schist
2
Sericite schist with minor quartz grains; calcareous
1
Gabbro
P10a
Aphyric and porphyritic felsic to intermediate dykes and dyke complexes
Geological contact (observed, approximate, extrapolated)- NATMAP Shield Margin Project Working Group, 1998
81
Schistosity (inclined)
Outcrop
40 cm
Trench with spoil pile and maximum depth
nbr- no bedrock exposed
wf - water-filled
og - overgrown

Figure 3-3: Geology and trench locations at Hanson occurrence.

LOCATION: 4

NAME: Pato
UTM: 383320E, 6076525N
AREA: approximately 1000 m SSE of Claw Bay, Elbow Lake
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage, then traverse
AIRPHOTO: MB90025-34

EXPLORATION SUMMARY

The claim was staked in 1933 by Mr Albert McBrearthy. Some trenching was done on one of the areas containing quartz veins (Stockwell, 1935). No work has been reported for this occurrence since that time.

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 4-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). This occurrence is located in schistose, fine-grained mafic volcanic rocks that are part of the Claw Bay basalt (unit F1b). The schistosity trends 270° and dips 76°S. The contact with the Elbow Lake tonalite (unit P6a) lies approximately 30 metres to the south of the occurrence. Narrow tonalite dykes are common in the volcanic rocks marginal to the intrusion.

MINERALIZATION

A single overgrown trench along the side of a hill was located during this investigation (Fig. 4-2). The trench trends 265° and is 3.5 m long, 1 to 1.5 m wide and averages 20 cm deep. Along its north side, a milky quartz vein 15 cm thick and parallel to the foliation at 268°/76° is exposed. The vein is crenulated. Minor disseminated pyrite occurs in the quartz. A few metres to the north of the trench, along the north side of the hill, a milky quartz vein with epidote and chloritic wallrock inclusions and <1% disseminated pyrite trends approximately 270°. This vein is discontinuous and ranges in thickness from 40 to 110 cm. The tonalite to the south contains common irregular quartz masses and segregations to 4 cm with no obvious structural control. Sparse chalcopyrite and galena have been noted at this occurrence, and it was reported that free gold is also present (Stockwell, 1935).

GEOCHEMICAL DATA

None.

CLASSIFICATION

Vein type deposit; multiple veins or lenses. Associated with a shear zone in mafic volcanic rocks proximal to a tonalite intrusion.

REFERENCES

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Stockwell, C.H.

1935: Gold Deposits of the Elbow-Morton Area, Northern Manitoba; Geological Survey of Canada, Memoir 186, 74pp.

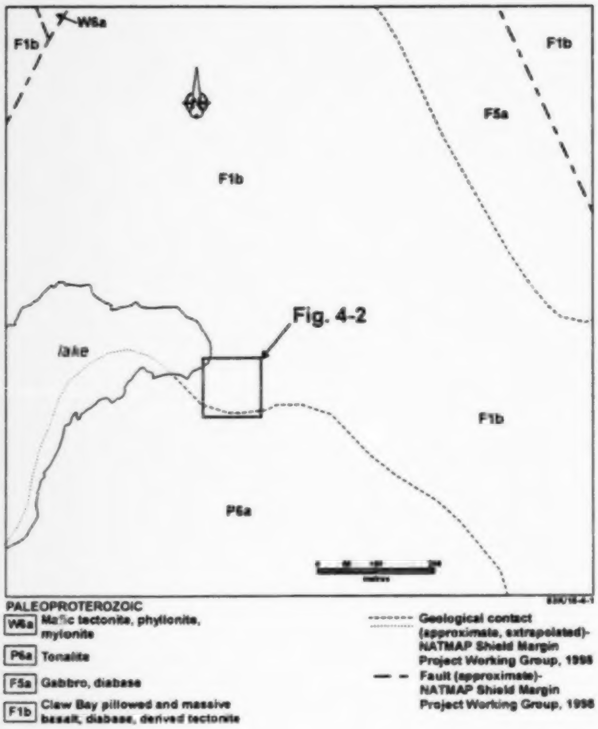
W6a
F1b
F1b
F5a
F1b
Fig. 4-2
lake
F1b
P6a
metres
PALEOPROTEROZOIC
W6a Mafic tectonite, phyllonite, mylonite
P6a Tonalite
F5a Gabbro, diabase
F1b Claw Bay pillowed and massive basalt, diabase, derived tectonite
Geological contact (approximate, extrapolated)- NATMAP Shield Margin Project Working Group, 1998
Fault (approximate)- NATMAP Shield Margin Project Working Group, 1998

Figure 4-1: Geological setting of Pato occurrence.

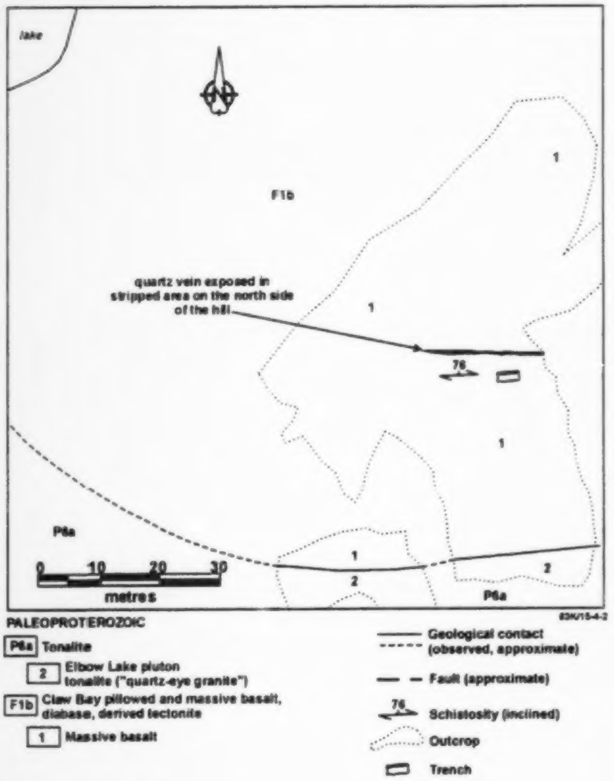
lake
F1b
1
quartz vein exposed in stripped area on the north side of the hill
1
76
1
P6a
0 10 20 30
metres
1
2
2
P6a
PALEOPROTEROZOIC
P6a Tonalite
2 Elbow Lake pluton tonalite ("quartz-eye granite")
F1b Claw Bay pillowed and massive basalt, diabase, derived tectonite
1 Massive basalt
Geological contact (observed, approximate)
Fault (approximate)
76 Schistosity (inclined)
Outcrop
Trench

Figure 4-2: Geology and trench location at Pato occurrence.

LOCATION: 5

NAME: Big Dome No. 6
UTM: 383850E, 6077625N
AREA: east side of Elbow Lake, north of creek between Claw Bay and Centre Lake
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage, then traverse
AIRPHOTO: MB90025-34

EXPLORATION SUMMARY

The claim was staked in 1933 by Mr Harvey LeBlanc (Stockwell, 1935). In 1969 a ground HLEM (Ronka) and magnetometer survey was performed over the area for Guggenheim Exploration Company, Inc. (A.F. 92261). No further work is recorded for this property.

The main occurrence has been explored by a number of trenches and shallow pits. Approximately 100 m SE of the main group of excavations, several additional (more recent?) trenches have been excavated.

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 5-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by pillowed and massive aphyric flows of the Claw Bay-Moen Bay basalt (unit F1b). It is bounded to the NE and SW by fine- to medium-grained equigranular diabase and gabbro (unit F5a).

The occurrence is hosted by one or more massive, weakly foliated, fine- to medium-grained felsic dykes (Fig. 5-2 and -3) emplaced into fine-grained mafic rocks of probable volcanic origin. Quartz phenocrysts can make up more than 20% of the intrusion. Wallrock inclusions are common, especially at the dyke margins. Banding in the mafic rock is irregular and shows open crenulations and folds. Stretched pillows and (flow?) breccia textures are present. An irregular 0.5 m thick granitic dyke cuts the mafic rocks in the northern part of the occurrence area.

MINERALIZATION

The trenches expose a series of irregular milky quartz veins, stringer networks and masses within the felsic intrusions and at the contacts with the enclosing mafic rocks. Only the larger quartz bodies are shown on the accompanying maps. The quartz contains up to 5% disseminated pyrite and trace amounts of chalcopyrite.

GEOCHEMICAL DATA

None.

CLASSIFICATION

Vein type deposit; multiple veins and lenses. Associated with one or more felsic dykes emplaced into tectonically banded mafic volcanic rocks.

REFERENCES

A.F. 92261; Cancelled Assessment File, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Stockwell, C.H.

1935: Gold Deposits of the Elbow-Morton Area, Northern Manitoba; Geological Survey of Canada, Memoir 186, 74pp.

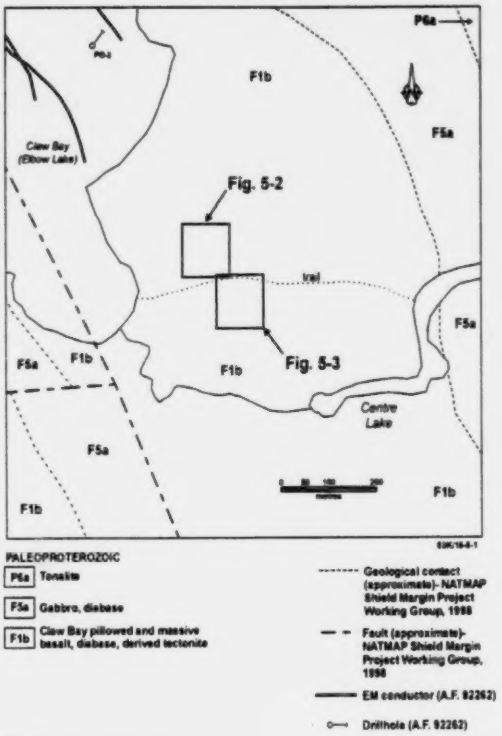
P6a
PD-3
Claw Bay (Elbow Lake)
F1b
F5a
Fig. 5-2
trail
Fig. 5-3
Centre Lake
0 50 100 200
metres
83K/16-5-1
PALEOPROTEROZOIC
P6a Tonalite
F5a Gabbro, diabase
F1b Claw Bay pillowed and massive basalt, diabase, derived tectonite
Geological contact (approximate)- NATMAP Shield Margin Project Working Group, 1998
Fault (approximate)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 92262)
Drillhole (A.F. 92262)

Figure 5-1: Geological setting of Big Dome occurrence.

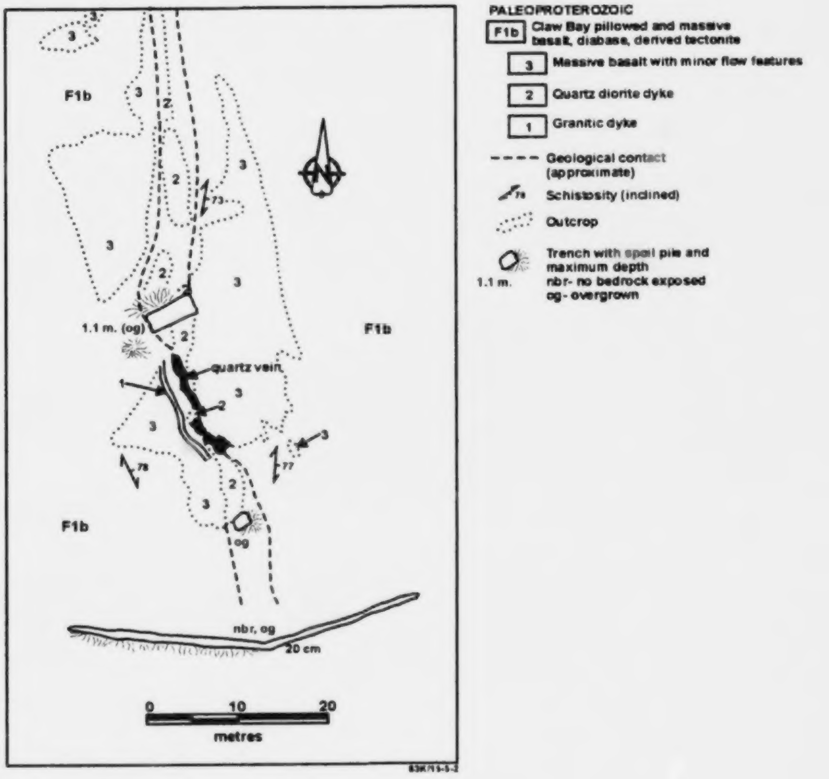
F1b
3
2
1
73
1.1 m. (og)
quartz vein
78
77
og
nbr, og
20 cm
0 10 20
metres
83K/15-5-2
PALEOPROTEROZOIC
F1b Claw Bay pillowed and massive basalt, diabase, derived tectonite
3 Massive basalt with minor flow features
2 Quartz diorite dyke
1 Granitic dyke
Geological contact (approximate)
Schistosity (inclined)
Outcrop
Trench with spoil pile and maximum depth
1.1 m.
nbr- no bedrock exposed
og- overgrown

Figure 5-2: Geology and trench locations at Big Dome occurrence.

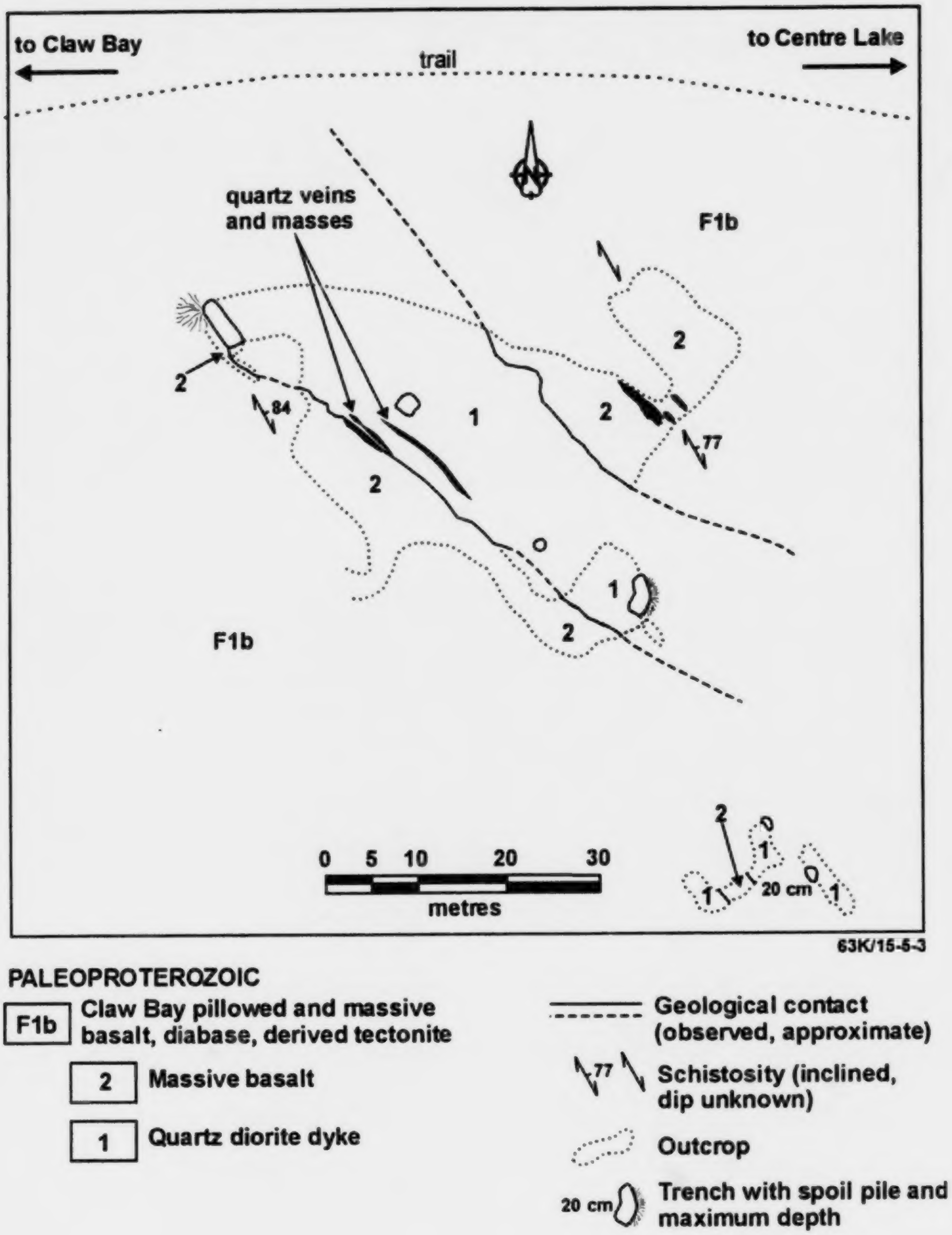
to Claw Bay
trail
to Centre Lake
quartz veins and masses
F1b
2
1
84
77
F1b
0 5 10 20 30
metres
20 cm
63K/15-5-3
PALEOPROTEROZOIC
F1b Claw Bay pillowed and massive basalt, diabase, derived tectonite
2 Massive basalt
1 Quartz diorite dyke
Geological contact (observed, approximate)
Schistosity (inclined, dip unknown)
Outcrop
Trench with spoil pile and maximum depth

Figure 5-3: Geology and trench locations at Big Dome occurrence.

LOCATION: 6

NAME: Hanna (Wright, 1930)
Gold Pan (Stockwell, 1935)
Ding How (McGlynn, 1959)
UTM: 380450E, 6077845N
AREA: along west side of Chinaman Island, Elbow Lake
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage
AIRPHOTO: MB90025-120

EXPLORATION SUMMARY

This claim was first staked in 1921 by Mr Thomas Hanna and re-staked by him in 1926 (Stockwell, 1935). By the end of June 1930 a shaft approximately 6 m (20 feet) deep had been put down on the No. 1 vein (Wright, 1930). At about the same time a number of trenches had been excavated to the north northeast of the shaft along the strike extension of the No. 2 vein. Stockwell (1935) indicates that the shaft was eventually put down to a depth of approximately 14 m (45 feet). Narrow quartz veins were also trenched along the northwest side of the island. Between 1936 and 1938, 104 m of diamond drilling was completed in the area (Mineral Inventory File 773). About 1944 a building with a small mill was erected on the south shore of the island. In 1976 Espina Copper Developments Ltd. completed 11 diamond drill holes around the island. Hole 5 returned values of 3.43 and 5.49 g/tonne over 1.54 m (The Northern Miner, April 8, 1976).

The geological setting is shown in Fig. 6-1, and the workings at this occurrence are shown in Fig 6-2 and –3. The trenches in the northwest part of the island (Fig. 6-3) are almost completely overgrown.

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 6-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). Chinamans Island is located along the eastern margin of the Elbow Lake shear zone (unit W6c) (Galley *et al.*, 1987, 1989; Syme, 1990, 1991, 1992). The NE part of the island contains an E-W striking sequence of massive to pillowed basalt with volcaniclastic interlayers (grouped under unit F1b) (Galley, field notes, 1987; Syme, 1991; Syme and Whalen, 1992). A 1 m thick layer of jasper-magnetite iron formation occurs near the centre of the island. This sequence is crosscut by north striking feldspar porphyry dykes to 2 m thick.

The remainder of the island consists of a NNE-trending mafic mylonite with transposed bounding lithologies. Movement indicators suggest dextral displacement along this shear zone, with a considerable dip-slip component (Galley, field notes, 1987; Syme, 1991). All of the auriferous quartz veins occur within the mylonite.

MINERALIZATION

The shaft was sunk on a set of quartz-ankerite veins outlined over an area 2-3 m wide and 10 m long and extending intermittently approximately 130 m to the north side of the island. The veins average 30 cm thick but widen to >1 m where they intersect iron formation (Galley, field notes, 1987). The quartz veins consist of coarse-grained clear to white varieties and finer-grained grey quartz, and contain patches of pink feldspar, ankerite, dark green chlorite and emerald green phyllosilicate. Fractures in the quartz carry minor pyrite, chalcopyrite, sphalerite, galena and native gold. The quartz and quartz-ankerite veins have been folded and boudinaged. Near the shaft, deformed tourmaline-ankerite veinlets are present. Visible gold was found in quartz during the 1992 examination of the property. Minor (<1%) pyrite and chalcopyrite are ubiquitous constituents in wallrock fractures.

GEOCHEMICAL DATA

Stockwell (1935) reports that the owners obtained the following assays:

86.56 to 268.75 g Au/t (2.77 to 8.6 oz. Au/ton) across approximately 40 to 60 cm (16 to 24 inches) in the shaft

50.0 g Au/t (1.60 oz. Au/ton) across approximately 40 cm (24 inches) in the Number 2 vein northeast of the shaft

Galley (field notes, 1987) obtained the following results:

23 ppm Au -grab sample of quartz vein from dump

92 ppb Au, 7 ppm W -chlorite-rich wallrock

<1 ppb Au, 11 ppm W -green phyllosilicate-rich rock from dump

CLASSIFICATION

Vein type deposit; multiple veins and lenses. Associated with the Elbow Lake shear zone and proximal to jasper-magnetite iron formation.

REFERENCES

A.F. 92654; Cancelled Assessment File, Manitoba Industry, Trade and Mines, Minerals Division.

Galley, A.G., Ames, D.E. and Franklin, J.M.

1987: Geological setting of gold mineralization in the Elbow Lake region, Manitoba; in Manitoba Energy and Mines, Minerals Division, Report of Field Activities, 1987, pp.175-177.

1989: Results of studies on the gold metallogeny of the Flin Flon belt; in Investigations by the Geological Survey of Canada in Manitoba and Saskatchewan during the 1984-1989 Mineral Development Agreements, Geological Survey of Canada, Open File 2133, pp.25-32.

McGlynn, J.C.

1959: Elbow-Heming Lakes Area, Manitoba; Geological Survey of Canada, Memoir 305, 72 pp.

Mineral Inventory File No. 773

Manitoba Energy and Mines, Minerals Division

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Stockwell, C.H.

1935: Gold Deposits of the Elbow-Morton Area, Northern Manitoba; Geological Survey of Canada, Memoir 186, 74pp.

Syme, E.C.

1990: Elbow Lake project (part of NTS 63K/15W); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1990, pp.49-57.

1991: Elbow Lake project - Part A: supracrustal rocks and structural setting; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1991, pp.14-27.

1992: Elbow Lake Project - Part A: Supracrustal rocks; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1992, pp.32-46.

Syme, E.C. and Whalen, J.B.

1992: Geology, Elbow Lake, Manitoba; Preliminary 1:20 000 map, Shield-Margin Project, File ELBOW92.PS.

Wright, J.F.

1930: Geology and mineral deposits of part of northwest Manitoba; in Geological Survey of Canada, Summary Report, 1930, Part C, pp.1-124.

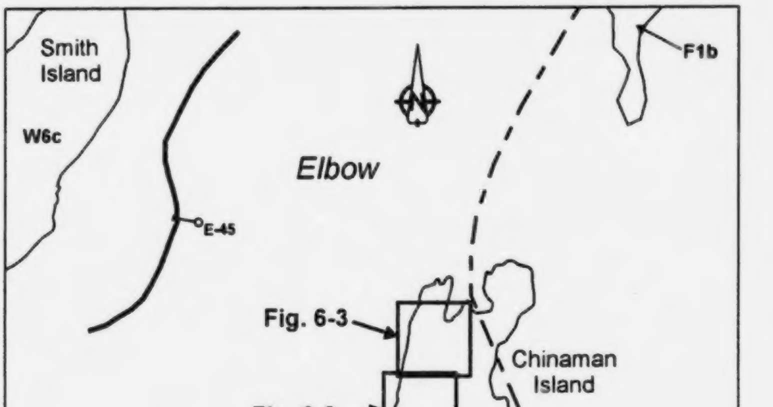
Smith Island
W6c
F1b
Elbow
E-45
Fig. 6-3
Fig. 6-2
Chinaman Island
Lake
0 50 100 200
metres
W6c
P2f
F5a
63K/15-6-1
PALEOPROTEROZOIC
W6c Mafic phyllonite +/- carbonate, cataclasite
P2f Diabase, diabase dyke complex
F5a Gabbro, diabase
F1b Claw Bay pillowed and massive basalt, diabase, derived tectonite
Geological contact (approximate, extrapolated)- NATMAP Shield Margin Project Working Group, 1998
Shear zone margin (approximate)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 92654)
Drillhole (A.F. 92654)

Figure 6-1: Geological setting of Hanna (Gold Pan; Ding How) occurrence.

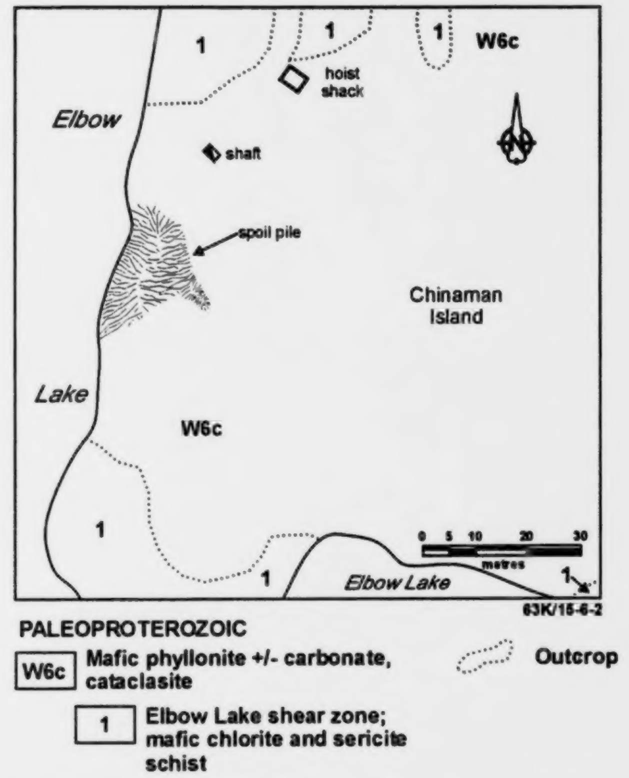
1
1
1
W6c
hoist shack
Elbow
shaft
spoil pile
Chinaman Island
Lake
W6c
1
1
0 5 10 20 30
metres
Elbow Lake
1
63K/15-6-2
PALEOPROTEROZOIC
W6c Mafic phyllonite +/- carbonate, cataclasite
1 Elbow Lake shear zone; mafic chlorite and sericite schist
Outcrop

Figure 6-2: Geology and workings at Hanna (Gold Pan; Ding How) occurrence.

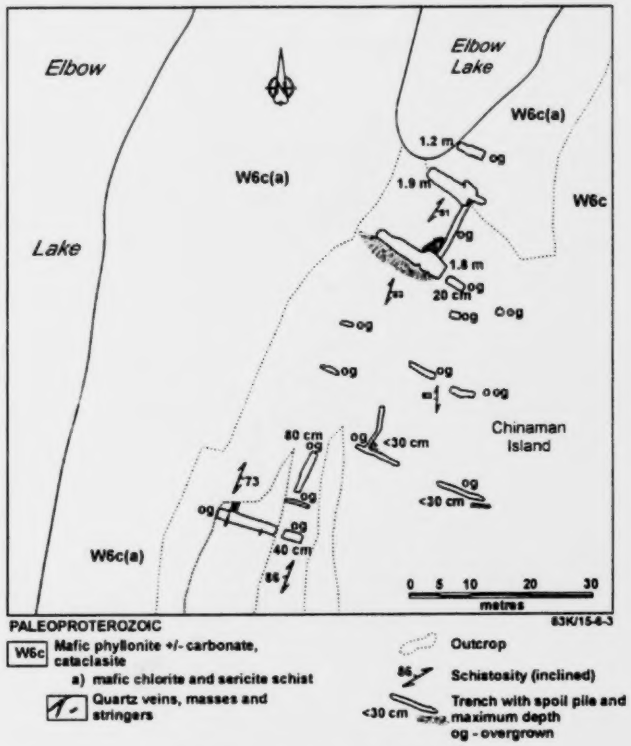
Elbow
Elbow Lake
W6c(a)
1.2 m
og
W6c(a)
1.9 m
W6c
Lake
og
1.8 m
20 cm
og
og
og
og
og
og
og
og
Chinaman Island
80 cm
og
og
<30 cm
73
og
og
og
<30 cm
og
40 cm
W6c(a)
86
0 5 10 20 30
metres
PALEOPROTEROZOIC
63K/15-6-3
W6c Mafic phyllonite +/- carbonate, cataclasite
a) mafic chlorite and sericite schist
Quartz veins, masses and stringers
Outcrop
86 Schistosity (inclined)
<30 cm Trench with spoil pile and maximum depth
og - overgrown

Figure 6-3: Geology and trench locations at Hanna (Gold Pan; Ding How) occurrence.

LOCATION: 7

NAME: Smith Island No. 1
UTM: 379785E, 6078230N
AREA: Smith Island, Elbow Lake
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage
AIRPHOTO: MB90025-120

EXPLORATION SUMMARY

This occurrence was staked in 1933 by Mr James A. Smith (Stockwell, 1935). Several pits were excavated, but no work has been recorded since that time.

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 7-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by schists (unit W6c) of the Elbow Lake shear zone (Galley *et al.*, 1987, 1989; Syme, 1990, 1991, 1992). The structure is approximately 1500 m thick in this area. Relatively unsheared basalt (unit F1a) occurs as blocks within the shear zone.

The rocks on Smith Island consist of chlorite and carbonate schists of the Elbow Lake shear zone. The shear zone is crosscut by NNE-trending quartz and/or feldspar-phyric dykes (Fig. 7-2). Several dioritic dykes are also present. The rocks show a strong pervasive penetrative foliation that trends 025° and dips 85°SE. Dyke margins are schistose and some of the thinner feldspar porphyry dykes have been boudinaged. Several areas of carbonate alteration host deformed quartz-carbonate veins.

MINERALIZATION

Stockwell (1935) indicates that quartz veins occur in a quartz porphyry dyke that has been exposed at intervals for approximately 140 m (450 feet) from the north shore of the island. The porphyry is sparsely mineralized with disseminated arsenopyrite and pyrite. Quartz stringers within the porphyry carry minor sphalerite. Galley (field notes, 1987) indicates that the mineralization is associated with strongly hematitic alteration halos around a series of quartz-feldspar veins. The host schist to the porphyry contains deformed quartz veins and disseminated pyrite.

GEOCHEMICAL DATA

None.

CLASSIFICATION

Vein type deposit; multiple veins or lenses. Associated with quartz porphyry dyke hosted by schists of the Elbow Lake shear zone.

REFERENCES

A.F. 92654; Cancelled Assessment File, Manitoba Industry, Trade and Mines, Minerals Division.

Galley, A.G., Ames, D.E. and Franklin, J.M.

1987: Geological setting of gold mineralization in the Elbow Lake region, Manitoba; in Manitoba Energy and Mines, Minerals Division, Report of Field Activities, 1987, pp.175-177.

1989: Results of studies on the gold metallogeny of the Flin Flon belt; in Investigations by the Geological Survey of Canada in Manitoba and Saskatchewan during the 1984-1989 Mineral Development Agreements, Geological Survey of Canada, Open File 2133, pp.25-32.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Stockwell, C.H.

1935: Gold Deposits of the Elbow-Morton Area, Northern Manitoba; Geological Survey of Canada, Memoir 186, 74pp.

Syme, E.C.

1990: Elbow Lake project (part of NTS 63K/15W); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1990, pp.49-57.

1991: Elbow Lake project - Part A: supracrustal rocks and structural setting; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1991, pp.14-27.

1992: Elbow Lake Project - Part A: Supracrustal rocks; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1992, pp.32-46.

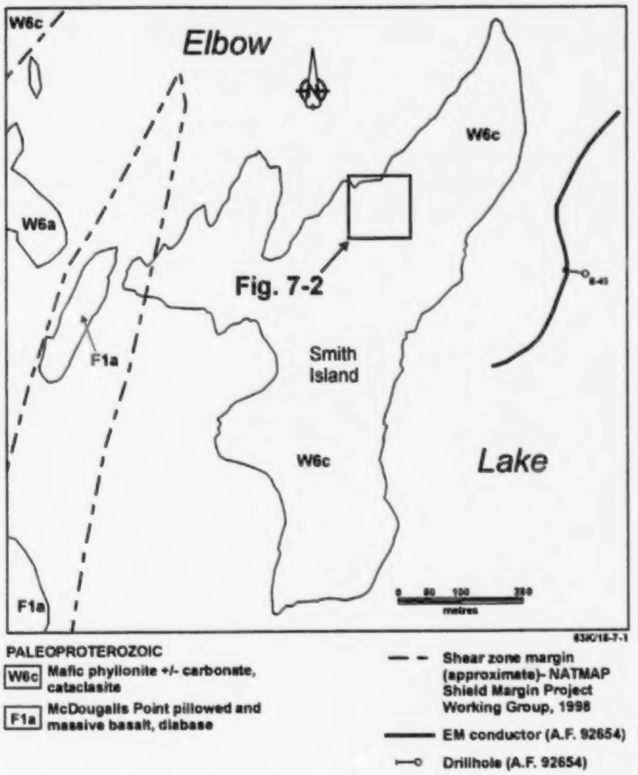
W6c
Elbow
W6c
W6a
Fig. 7-2
F1a
Smith Island
W6c
Lake
F1a
0 50 100 200
metres
63K/16-7-1
PALEOPROTEROZOIC
W6c Mafic phyllonite +/- carbonate, cataclasite
F1a McDougalls Point pillowed and massive basalt, diabase
Shear zone margin (approximate)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 92654)
Drillhole (A.F. 92654)

Figure 7-1: Geological setting of Smith Island No. 1 occurrence.

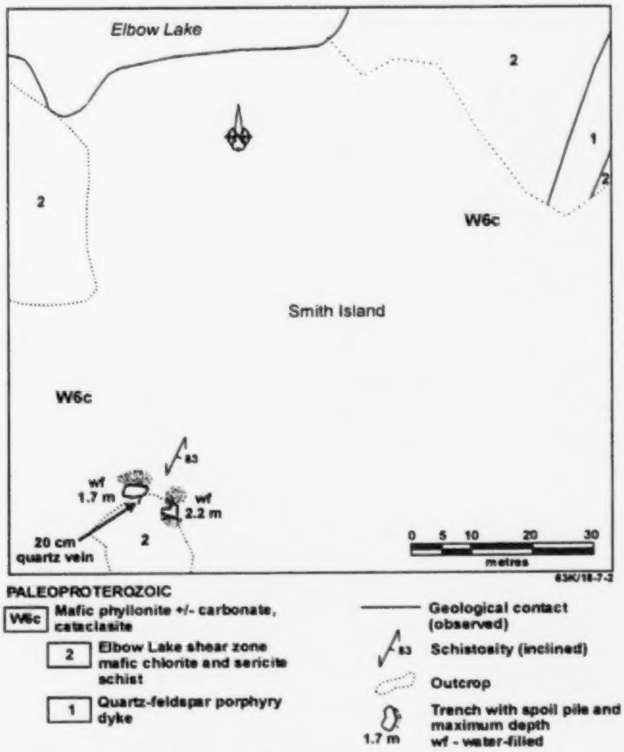
Elbow Lake
2
1
2
2
W6c
Smith Island
W6c
83
wf
1.7 m
wf
2.2 m
20 cm quartz vein
2
0 5 10 20 30
metres
63K/16-7-2
PALEOPROTEROZOIC
W6c Mafic phyllonite +/- carbonate, cataclasite
2 Elbow Lake shear zone mafic chlorite and sericite schist
1 Quartz-feldspar porphyry dyke
Geological contact (observed)
83 Schistosity (inclined)
Outcrop
1.7 m Trench with spoil pile and maximum depth wf - water-filled

Figure 7-2: Geology and trench locations at Smith Island No. 1 occurrence.

LOCATION: 8

NAME: Smith Island No.2
UTM: 379550E, 6077385N
AREA: island immediately SSW of south end of Smith Island, Elbow Lake
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage
AIRPHOTO: MB90025-120

EXPLORATION SUMMARY

The claim was staked in 1933 by Mr James A. Smith (Stockwell, 1935). A trench was subsequently excavated on a mineralized area approximately 45 m (150 feet) from the north shore of the island. Additional trenches are located approximately 35 m NW of the main trench and along the shoreline on the small bay at the NW end of the island (Fig. 8.1). No work has been recorded since Stockwell's visit.

Several trenches were located at the north end of the island. One was dry and provided good bedrock exposure.

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 8-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by schists (unit W6c) of the Elbow Lake shear zone (Galley *et al.*, 1987, 1989; Syme, 1990, 1991, 1992), which is approximately 900 m thick in this area. Relatively unsheared basalt (unit F1a) occurs as blocks within the shear zone.

The rocks at the occurrence consist of chloritic and calcareous schists. The dominant foliation trends 016° and is subvertical. The schists are crosscut by NNE-trending quartz and/or feldspar-phyric dykes. At the main trench, a fine-grained medium to light olive green dyke intrudes the fine-grained dark grey schist. The main dyke is approximately 110 cm thick and trends 185°/83°W. It is sericitic and shows occasional slickensided surfaces.

MINERALIZATION

The felsic dyke contains randomly oriented quartz veinlets 5-10 mm thick. No sulphides were noted in the quartz. Minor thin quartz veinlets occur in the mafic schist. Euhedral pyrite grains are common in close proximity to the veinlets, but don't occur within the veinlets.

GEOCHEMICAL DATA

None.

CLASSIFICATION

Vein type deposit; multiple veins or lenses. Associated with quartz porphyry dyke hosted by schist of the Elbow Lake shear zone.

REFERENCES

Galley, A.G., Ames, D.E. and Franklin, J.M.

1987: Geological setting of gold mineralization in the Elbow Lake region, Manitoba; in Manitoba Energy and Mines, Minerals Division, Report of Field Activities, 1987, pp.175-177.

1989: Results of studies on the gold metallogeny of the Flin Flon belt; in Investigations by the Geological Survey of Canada in Manitoba and Saskatchewan during the 1984-1989 Mineral Development Agreements, Geological Survey of Canada, Open File 2133, pp.25-32.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Stockwell, C.H.

1935: Gold Deposits of the Elbow-Morton Area, Northern Manitoba; Geological Survey of Canada, Memoir 186, 74pp.

Syme, E.C.

1990: Elbow Lake project (part of NTS 63K/15W); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1990, pp.49-57.

1991: Elbow Lake project - Part A: supracrustal rocks and structural setting; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1991, pp.14-27.

1992: Elbow Lake Project - Part A: Supracrustal rocks; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1992, pp.32-46.

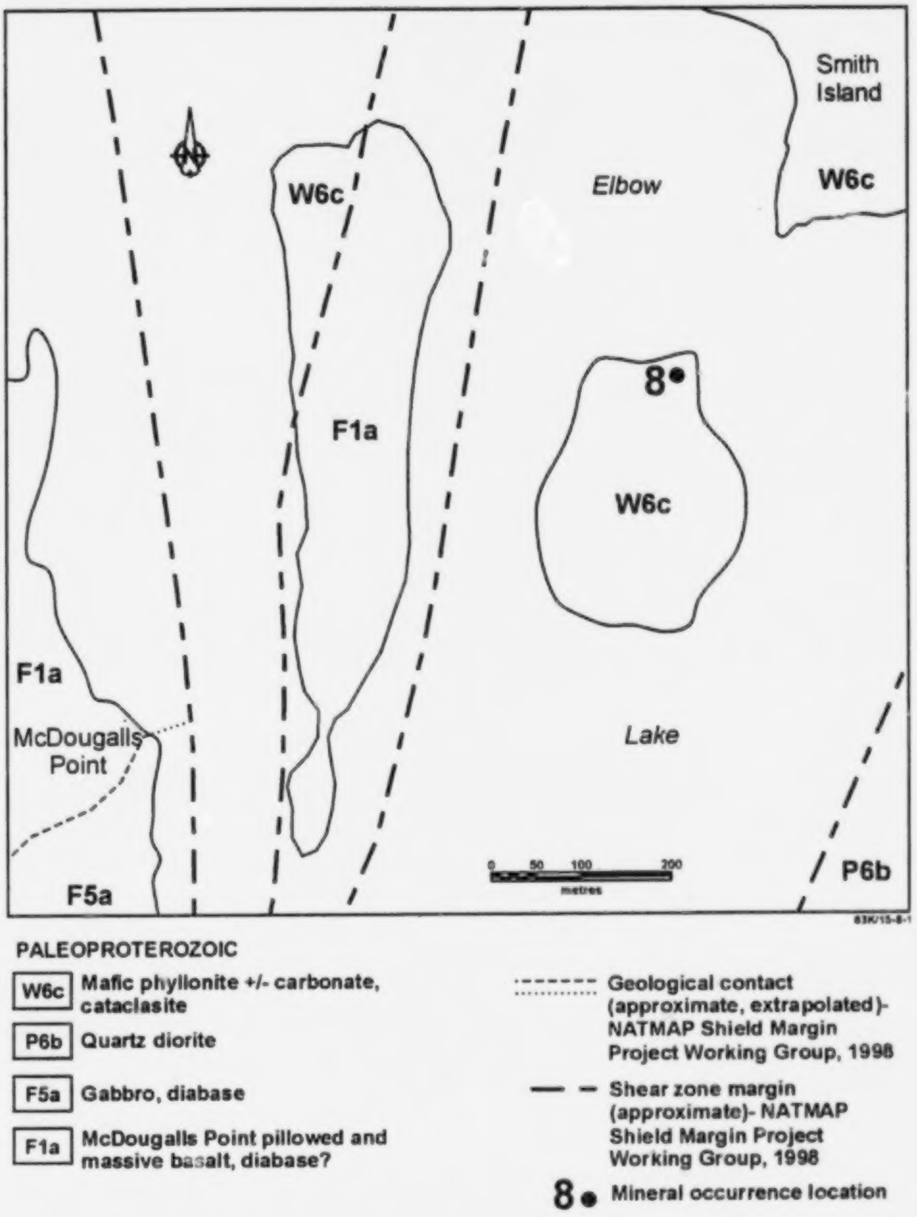
Smith Island
W6c
Elbow
W6c
8●
F1a
W6c
F1a
McDougalls Point
Lake
F5a
0 50 100 200
metres
P6b
PALEOPROTEROZOIC
W6c Mafic phyllonite +/- carbonate, cataclasite
P6b Quartz diorite
F5a Gabbro, diabase
F1a McDougalls Point pillowed and massive basalt, diabase?
Geological contact (approximate, extrapolated)- NATMAP Shield Margin Project Working Group, 1998
Shear zone margin (approximate)- NATMAP Shield Margin Project Working Group, 1998
8● Mineral occurrence location

Figure 8-1: Geological setting of Smith Island No. 2 occurrence.

LOCATION: 9

NAME: Hanna
UTM: 381110E, 6079935N
AREA: island in east central Elbow Lake (informally known as Leaping Moose Island)
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage
AIRPHOTO: MB90025-54

EXPLORATION SUMMARY

This prospect was staked in 1921 by Mr Tom Hanna. By 1934 six trenches had been excavated in an area south of the small bay on the north side of the island (Stockwell, 1935). In 1976 Espina Copper Developments Ltd. optioned the property and carried out a 22 hole drill programme in the area (Mineral Inventory File 778).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 9-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by schists (unit W6c) of the Elbow Lake shear zone near its junction with the Claw Bay shear zone (Galley *et al.*, 1987, 1989; Syme, 1990, 1991, 1992). In this area the shear zone is approximately 2700 m thick (Syme and Whalen, 1992).

The lithologic sequence on the island consists of heterolithic tuff breccia, lapilli tuff and tuff, and jasper-magnetite iron formation. The tuff breccia contains a large number of felsic volcanic clasts. The sequence has been intruded by gabbro dykes and sills, and quartz-feldspar porphyry dykes to 2 m thick. The sequence on the eastern part of the island is strongly foliated at 020° to 350°/90°, with stretching ratios typically 10:1. To the west the rocks become increasingly schistose and are sheared, mylonitized and altered, as part of the Elbow Lake shear zone. Felsic dykes become increasingly segmented and the jasper-magnetite iron formation has been transposed into the shear foliation.

MINERALIZATION

The occurrence consists of two zones (east and west) of quartz-carbonate altered rock separated by a 40 m thick interval of quartz veined rock (Fig. 9-2). The carbonate-rich areas are up to 20 and 60 m thick, respectively, and contain quartz lenses up to 60 cm thick and 1.5 m long with Fe-carbonate lenses to 2 m long. The host rocks are strongly carbonatized and chloritized and the felsic dykes are altered to sericite, carbonate and quartz. The west zone can be traced along the west side of the island for approximately 200 m and the east zone for 180 m.

Gold mineralization appears to be limited to the eastern alteration zone. A folded and boudinaged Fe-carbonate-quartz vein system, trending 015° and containing accessory bright green phyllosilicate, pyrite and trace quantities of magnetite and hematite, occurs in this area. The host rocks are pervasively carbonatized. Late planar tourmaline-quartz veins trending 350-000° cut the earlier carbonate-quartz veins and the host rocks.

GEOCHEMICAL DATA

Stockwell (1935) indicates that the veins and schist are reported to carry up to 7.8 g Au/t (0.25 oz. Au/ton).

CLASSIFICATION

Vein type deposit; multiple quartz and/or quartz-carbonate veins. This occurrence is located within schist of the Elbow Lake shear zone, associated with jasper-magnetite iron formation and quartz-feldspar porphyry dykes.

REFERENCES

Galley, A.G., Ames, D.E. and Franklin, J.M.

1987: Geological setting of gold mineralization in the Elbow Lake region, Manitoba; in Manitoba Energy and Mines, Minerals Division, Report of Field Activities, 1987, pp.175-177.

1989: Results of studies on the gold metallogeny of the Flin Flon belt; in Investigations by the Geological Survey of Canada in Manitoba and Saskatchewan during the 1984-1989 Mineral Development Agreements, Geological Survey of Canada, Open File 2133, pp.25-32.

Mineral Inventory File No. 778

Manitoba Energy and Mines, Minerals Division

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Stockwell, C.H.

1935: Gold Deposits of the Elbow-Morton Area, Northern Manitoba; Geological Survey of Canada, Memoir 186, 74pp.

Syme, E.C.

1990: Elbow Lake project (part of NTS 63K/15W); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1990, pp.49-57.

1991: Elbow Lake project - Part A: supracrustal rocks and structural setting; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1991, pp.14-27.

1992: Elbow Lake Project - Part A: Supracrustal rocks; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1992, pp.32-46.

Syme, E.C. and Whalen, J.B.

1992: Geology, Elbow Lake, Manitoba; Preliminary 1:20 000 map, Shield-Margin Project, File ELBOW92.PS.

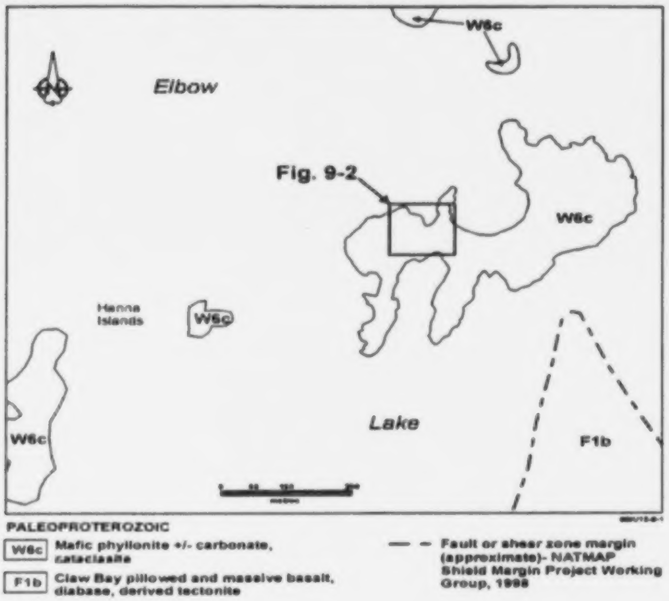
W6c
Elbow
Fig. 9-2
W6c
Hanna Islands
W6c
W6c
Lake
F1b
0
50
100
200
metres
PALEOPROTEROZOIC
W6c
Mafic phyllonite +/- carbonate, cataclasite
F1b
Claw Bay pillowed and massive basalt, diabase, derived tectonite
Fault or shear zone margin (approximate)- NATMAP Shield Margin Project Working Group, 1998

Figure 9-1: Geological setting of Hanna occurrence.

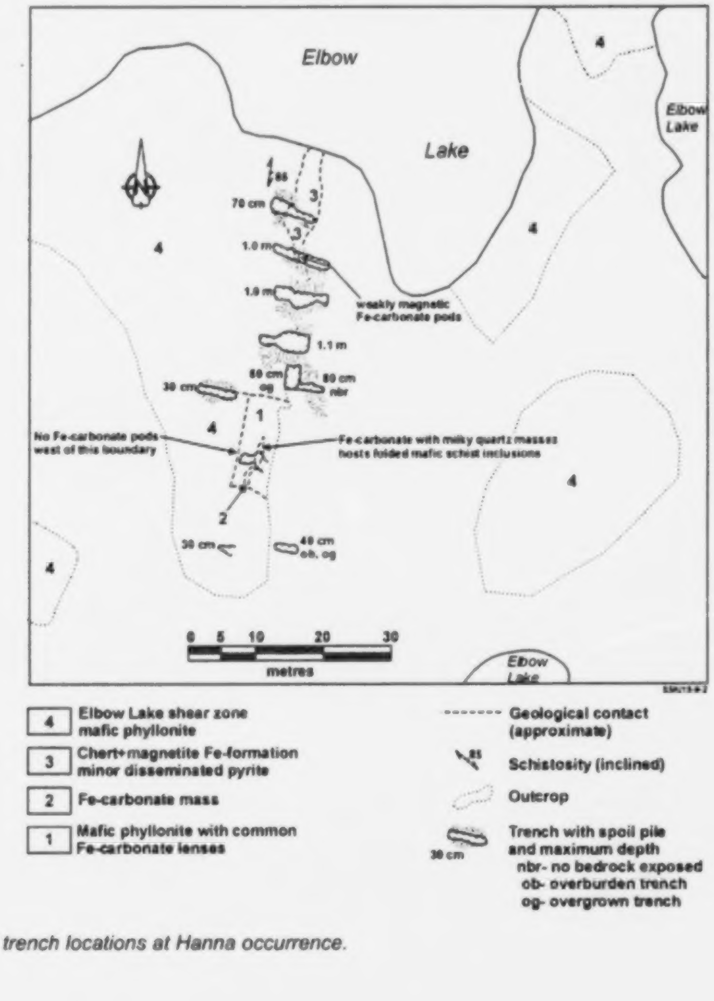
Elbow
Lake
Elbow Lake
4
86
3
70 cm
3
1.0 m
1.0 m
weakly magnetic Fe-carbonate pods
4
1.1 m
80 cm og
80 cm nbr
30 cm
1
4
No Fe-carbonate pods west of this boundary
Fe-carbonate with milky quartz masses hosts folded mafic schist inclusions
4
2
30 cm
40 cm ob, og
4
0
5
10
20
30
metres
Elbow Lake
4
Elbow Lake shear zone mafic phyllonite
3
Chert+magnetite Fe-formation minor disseminated pyrite
2
Fe-carbonate mass
1
Mafic phyllonite with common Fe-carbonate lenses
Geological contact (approximate)
85
Schistosity (inclined)
Outcrop
30 cm
Trench with spoil pile and maximum depth
nbr- no bedrock exposed
ob- overburden trench
og- overgrown trench

Figure 9-2: Geology and trench locations at Hanna occurrence.

LOCATION: 10

NAME: Harbour
UTM: 380530E, 6079635N
AREA: on largest of the Hanna Islands in central part of Elbow Lake, east of Big Poplar Island
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage
AIRPHOTO: MB90025-118

EXPLORATION SUMMARY

The property was staked in 1921 by Mr Thomas Hanna. By 1934 three trenches had been excavated (Stockwell, 1935). In 1976 Espina Copper Developments Ltd. optioned the property and carried out a 22 hole drill programme in the area (Mineral Inventory File 780).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 10-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by schists (unit W6c) of the Elbow Lake shear zone (Galley *et al.*, 1987, 1989; Syme, 1990, 1991, 1992). The structure is approximately 1600 m thick in this area, and the occurrence is situated in its central part (Syme and Whalen, 1992).

Galley (field notes, 1987) examined the property and this description is taken in part from his observations. All of the rock units have a strong 195°/80°W schistosity, but pre-shear lithologies can be recognized. These consist of coarse fragmental amygdaloidal mafic units, jasper-magnetite iron formation, diorite and quartz-feldspar porphyry. The quartz-feldspar porphyry appears to be a dyke, and now lies as a boudin 10x50 m in size that strikes 020°, within the shear zone. The jasper-magnetite iron formation trends 180°/80°W, is up to 3 m thick, and thins and forms two separate layers to the south that can be traced for approximately 35 m (Fig. 10-2). Within the iron formation, 5 cm thick chert bands are separated by 2 cm magnetite-hematite-chlorite bands. Southwards, along the strike extension of the iron formation, chlorite-carbonate schist contains 5-10% magnetite blebs up to 1 cm; some of these have pyrite cores.

The iron formation is strongly fractured and contains abundant deformed quartz-carbonate veins that trend 195° and are parallel to the schistosity. The area of quartz-carbonate veins extends beyond the iron formation up to 10 m into the enclosing schist.

MINERALIZATION

Pyrite occurs as stringers and veins up to 2 cm thick in the iron formation. The strongly sheared margins of the quartz-feldspar porphyry adjacent to the trenches contain 2-3% disseminated pyrite.

GEOCHEMICAL DATA

Stockwell (1935) indicates that the owner of the property reported assays of 7.8 g Au/t (0.25 oz. Au/ton) over approximately 2.3 m (8 ft.).

Galley (field notes, 1987) obtained the following results:

60 ppb Au -average of 3 pyrite-rich grab samples of iron formation

3 ppb Au -average of 2 grab samples from carbonate-sericite schist wallrock

320 ppb Au -grab sample from pyrite-rich quartz-feldspar dyke margin

CLASSIFICATION

Chemical sediment type deposit; silicate-oxide facies iron formation. This mineralization, quartz-feldspar porphyry dyke(s) and minor quartz-carbonate veins are spatially associated with the Elbow Lake shear zone, but it is unclear what the relationship is between the dykes and the gold mineralization.

REFERENCES

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1987: Geological setting of gold mineralization in the Elbow Lake region, Manitoba; in Manitoba Energy and Mines, Minerals Division, Report of Field Activities, 1987, pp.175-177.

1989: Results of studies on the gold metallogeny of the Flin Flon belt; in Investigations by the Geological Survey of Canada in Manitoba and Saskatchewan during the 1984-1989 Mineral Development Agreements, Geological Survey of Canada, Open File 2133, pp.25-32.

Mineral Inventory File No. 780

Manitoba Energy and Mines, Minerals Division

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

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1992: Elbow Lake Project - Part A: Supracrustal rocks; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1992, pp.32-46.

Syme, E.C. and Whalen, J.B.

1992: Geology, Elbow Lake, Manitoba; Preliminary 1:20 000 map, Shield-Margin Project, File ELBOW92.PS.

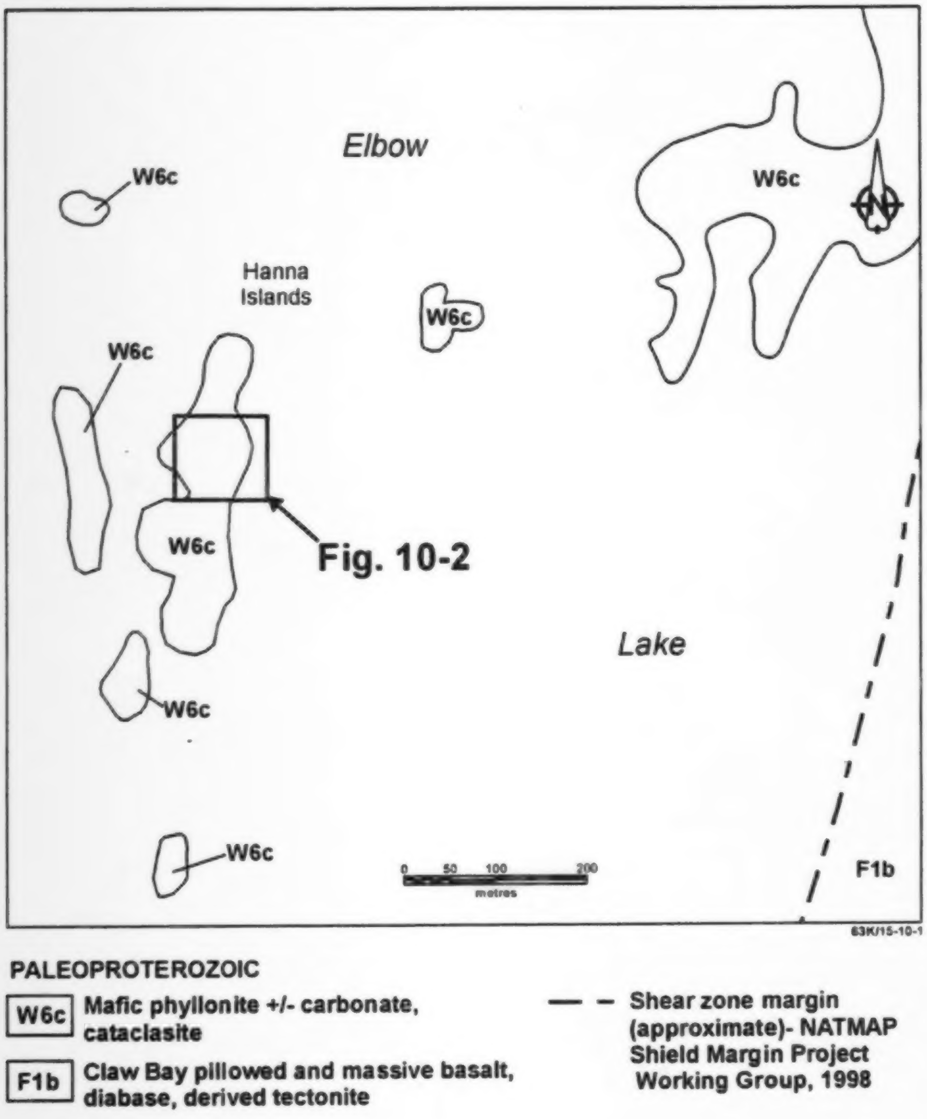
Elbow
W6c
W6c
Hanna Islands
W6c
W6c
W6c
Fig. 10-2
Lake
W6c
W6c
F1b
0 50 100 200
metres
63K/15-10-1
PALEOPROTEROZOIC
W6c Mafic phyllonite +/- carbonate, cataclasite
F1b Claw Bay pillowed and massive basalt, diabase, derived tectonite
Shear zone margin (approximate)- NATMAP Shield Margin Project Working Group, 1998

Figure 10-1: Geological setting of Harbour occurrence.

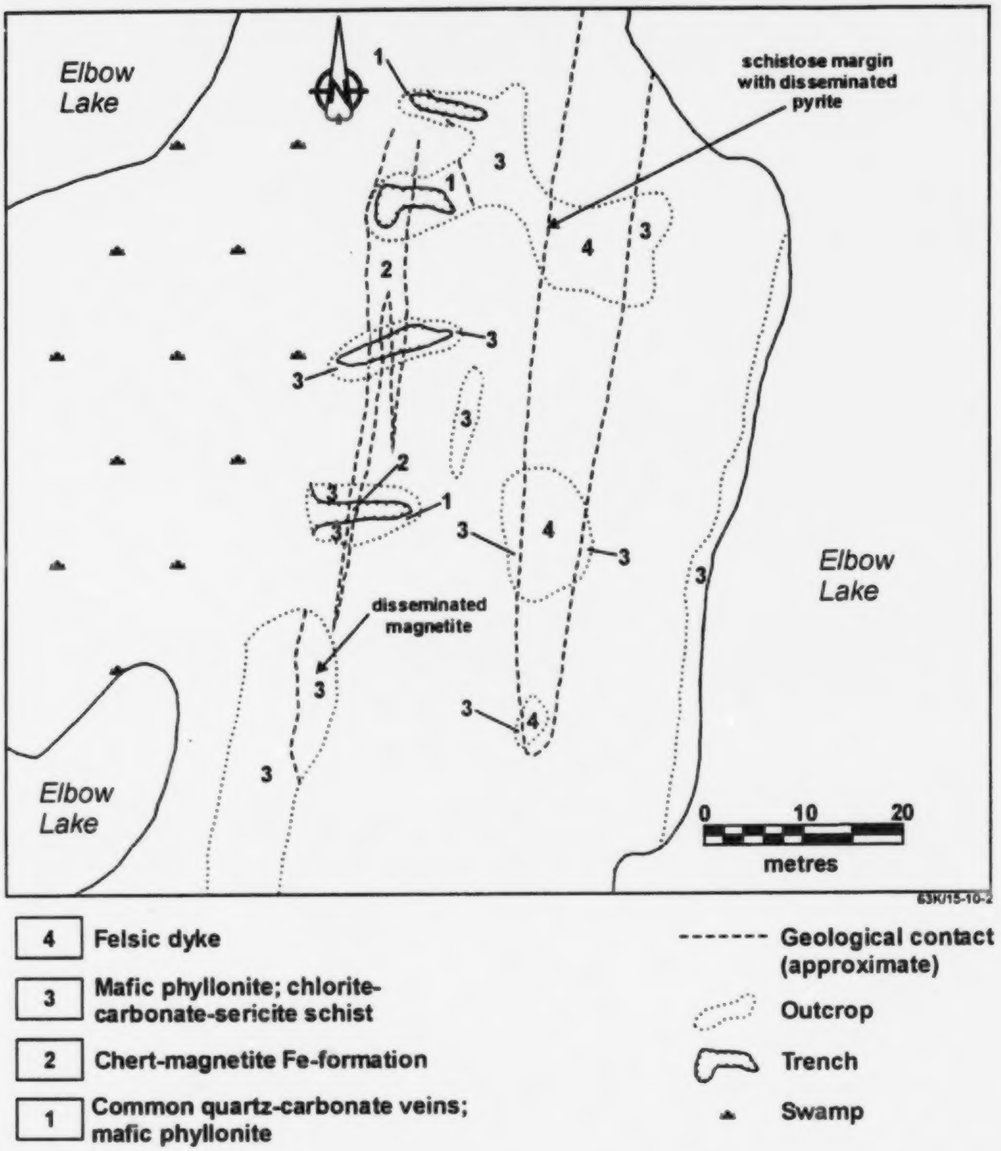
Elbow Lake
Elbow Lake
Elbow Lake
N
schistose margin with disseminated pyrite
disseminated magnetite
1
2
3
4
0
10
20
metres
63K/15-10-2
4 Felsic dyke
3 Mafic phyllonite; chlorite-carbonate-sericite schist
2 Chert-magnetite Fe-formation
1 Common quartz-carbonate veins; mafic phyllonite
Geological contact (approximate)
Outcrop
Trench
Swamp

Figure 10-2: Geology and trench locations at Harbour occurrence.

LOCATION: 11

NAME: Independent
UTM: 379170E, 6080245N
AREA: northwest corner of Big Poplar Island, Elbow Lake
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage
AIRPHOTO: MB90025-118

EXPLORATION SUMMARY

Stockwell (1935) records the presence of one trench along the lake shore. Inspection of this occurrence in 1992 revealed the presence of a second trench 23 m to the ENE of the first. Both these excavations date from the 1920's or 30's. No work has been reported since that time.

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 11-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by schists (unit W6c) of the Elbow Lake shear zone (Galley *et al.*, 1987, 1989; Syme, 1990, 1991, 1992). Relatively unsheared gabbro and diorite (unit P2a) and basalt (unit F1a) occur as blocks within the shear zone.

A mass of smoky grey to brownish red chert and jasper 3 to 20 m thick has been traced for approximately 40 m NE from the shoreline (Fig. 11-2). It is located at the contact between massive to pillowed mafic volcanic flows to the southeast and a thick sequence of mafic volcaniclastic rocks to the northwest (Galley, field notes, 1988). The mafic volcanic and volcaniclastic rocks contain up to 3% fine-grained magnetite, and hematite forms a common fracture coating. The rocks are strongly foliated as part of the Elbow Lake shear zone, and trend 001°/83°E. The chert is fractured and is transected by numerous milky quartz veins. Brown weathering Fe-carbonate is a minor constituent of the chert.

MINERALIZATION

The chert contains up to 3% euhedral pyrite. Earthy pyrite is present in narrow (0.5 to 1.0 cm) laminae in intensely schistose areas. Up to 1% disseminated pyrite also occurs in the schistose volcanic and volcaniclastic rocks adjacent to the chert.

GEOCHEMICAL DATA

None.

CLASSIFICATION

Chemical sediment type deposit; silicate facies iron formation. Contains milky quartz veinlets and is located within the Elbow Lake shear zone.

REFERENCES

A.F. 93052; Cancelled Assessment File, Manitoba Industry, Trade and Mines, Minerals Division.

Galley, A.G., Ames, D.E. and Franklin, J.M.

1987: Geological setting of gold mineralization in the Elbow Lake region, Manitoba; in Manitoba Energy and Mines, Minerals Division, Report of Field Activities, 1987, pp.175-177.

1989: Results of studies on the gold metallogeny of the Flin Flon belt; in Investigations by the Geological Survey of Canada in Manitoba and Saskatchewan during the 1984-1989 Mineral Development Agreements, Geological Survey of Canada, Open File 2133, pp.25-32.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Stockwell, C.H.

1935: Gold Deposits of the Elbow-Morton Area, Northern Manitoba; Geological Survey of Canada, Memoir 186, 74pp.

Syme, E.C.

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1991: Elbow Lake project - Part A: supracrustal rocks and structural setting; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1991, pp.14-27.

1992: Elbow Lake Project - Part A: Supracrustal rocks; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1992, pp.32-46.

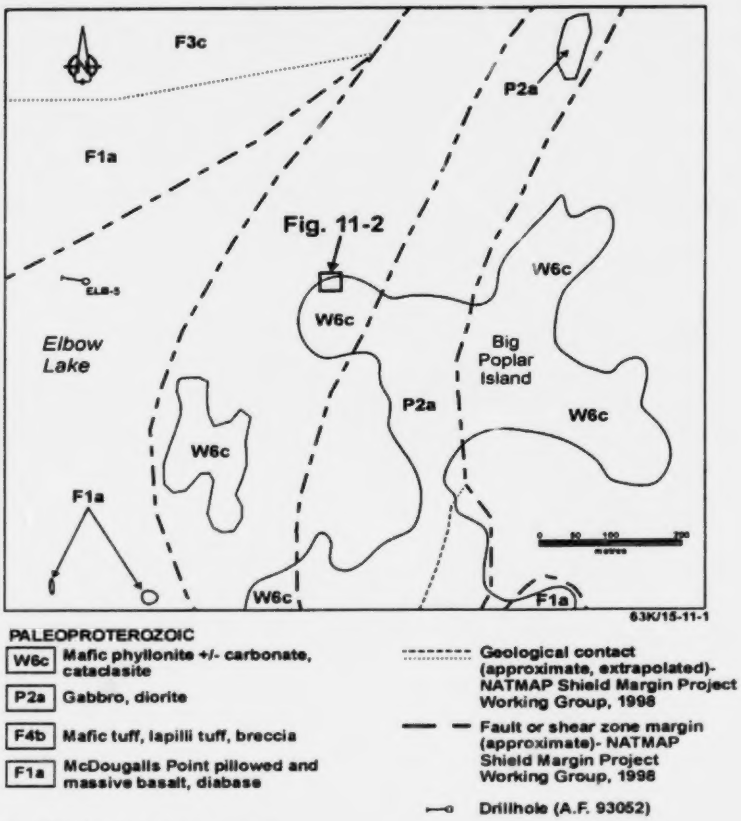
F3c
P2a
F1a
Fig. 11-2
W6c
ELB-5
W6c
Elbow Lake
Big Poplar Island
P2a
W6c
W6c
F1a
W6c
F1a
0 50 100 200
metres
63K/15-11-1
PALEOPROTEROZOIC
W6c Mafic phyllonite +/- carbonate, cataclasite
P2a Gabbro, diorite
F4b Mafic tuff, lapilli tuff, breccia
F1a McDougalls Point pillowed and massive basalt, diabase
Geological contact (approximate, extrapolated)- NATMAP Shield Margin Project Working Group, 1998
Fault or shear zone margin (approximate)- NATMAP Shield Margin Project Working Group, 1998
Drillhole (A.F. 93052)

Figure 11-1: Geological setting of Independent occurrence.

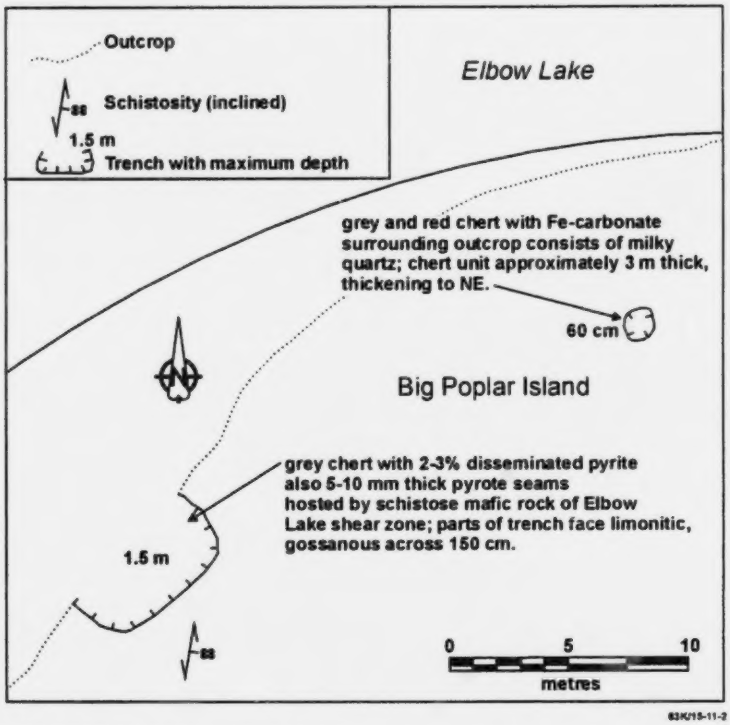
Outcrop
88 Schistosity (inclined)
1.5 m Trench with maximum depth
Elbow Lake
grey and red chert with Fe-carbonate surrounding outcrop consists of milky quartz; chert unit approximately 3 m thick, thickening to NE.
60 cm
Big Poplar Island
grey chert with 2-3% disseminated pyrite also 5-10 mm thick pyrote seams hosted by schistose mafic rock of Elbow Lake shear zone; parts of trench face limonitic, gossanous across 150 cm.
1.5 m
88
0 5 10
metres
63K/15-11-2

Figure 11-2: Geology and trench locations at Independent occurrence.

LOCATION: 12

NAME: June Bug
UTM: 379510E, 6080355N
AREA: north end of Big Poplar Island, Elbow Lake
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage
AIRPHOTO: MB90025-118

EXPLORATION SUMMARY

Stockwell (1935) observed a single trench at the time of his visit in 1934. No other work has been recorded since then.

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 12-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by schists (unit W6c) of the Elbow Lake shear zone (Galley *et al.*, 1987, 1989; Syme, 1990, 1991, 1992). A this latitude the structure has a thickness of approximately 2500 m (Syme and Whalen, 1992). Relatively unsheared gabbro and diorite (unit P2a) and basalt (unit F1a) occur as blocks within the shear zone.

A chert-jasper-magnetite, magnetite-mudstone and chlorite-carbonate schist sequence is exposed in a trench (Fig. 12-2) and intermittently for 200 m along the shore of Big Poplar Island near this occurrence (Galley, field notes, 1987). This sequence trends NE to NNE and lies between massive and pillowed mafic volcanic flows to the SE and mafic volcaniclastic rocks to the NW.

The rocks are strongly foliated at 015°/85°E as part of the Elbow Lake shear zone, and show a steep north plunging mineral lineation (Galley, field notes, 1987). They are calcareous and contain a light green phyllosilicate.

MINERALIZATION

The single mostly overgrown trench exposes sheared mafic volcanic rock and chert. The chert is crosscut by numerous irregular milky quartz veinlets and contains minor fine-grained pyrite. Stockwell (1935) reported minor arsenopyrite in the chert.

GEOCHEMICAL DATA

None.

CLASSIFICATION

Chemical sediment type deposit; silicate facies iron formation with milky quartz veinlets within the Elbow Lake shear zone.

REFERENCES

Galley, A.G., Ames, D.E. and Franklin, J.M.

1987: Geological setting of gold mineralization in the Elbow Lake region, Manitoba; in Manitoba Energy and Mines, Minerals Division, Report of Field Activities, 1987, pp.175-177.

1989: Results of studies on the gold metallogeny of the Flin Flon belt; in Investigations by the Geological Survey of Canada in Manitoba and Saskatchewan during the 1984-1989 Mineral Development Agreements, Geological Survey of Canada, Open File 2133, pp.25-32.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Stockwell, C.H.

1935: Gold Deposits of the Elbow-Morton Area, Northern Manitoba; Geological Survey of Canada, Memoir 186, 74pp.

Syme, E.C.

1990: Elbow Lake project (part of NTS 63K/15W); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1990, pp.49-57.

1991: Elbow Lake project - Part A: supracrustal rocks and structural setting; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1991, pp.14-27.

1992: Elbow Lake Project - Part A: Supracrustal rocks; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1992, pp.32-46.

Syme, E.C. and Whalen, J.B.

1992: Geology, Elbow Lake, Manitoba; Preliminary 1:20 000 map, Shield-Margin Project, File ELBOW92.PS.

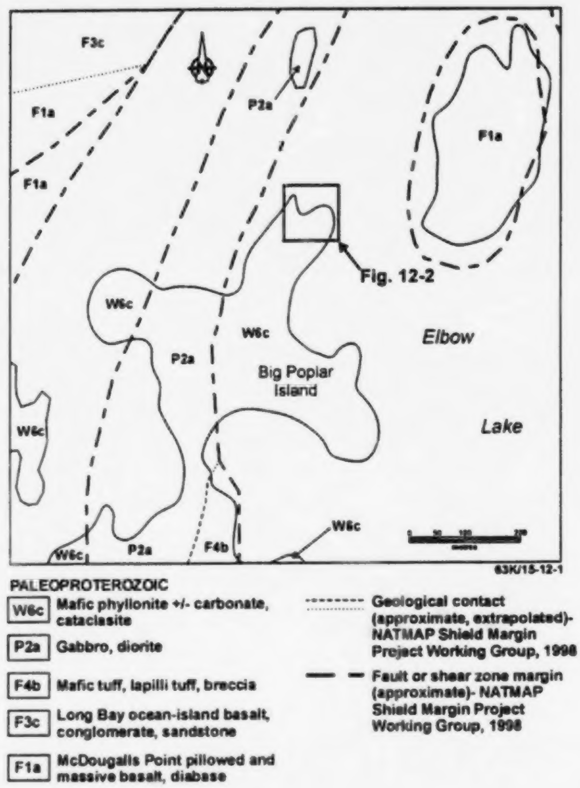
F3c
F1a
F1a
P2a
F1a
Fig. 12-2
W6c
W6c
P2a
Big Poplar Island
Elbow
Lake
W6c
W6c
P2a
F4b
W6c
63K/15-12-1
PALEOPROTEROZOIC
W6c Mafic phyllonite +/- carbonate, cataclasite
P2a Gabbro, diorite
F4b Mafic tuff, lapilli tuff, breccia
F3c Long Bay ocean-island basalt, conglomerate, sandstone
F1a McDougalls Point pillowed and massive basalt, diabase
Geological contact (approximate, extrapolated)- NATMAP Shield Margin Project Working Group, 1998
Fault or shear zone margin (approximate)- NATMAP Shield Margin Project Working Group, 1998

Figure 12-1: Geological setting of June Bug occurrence.

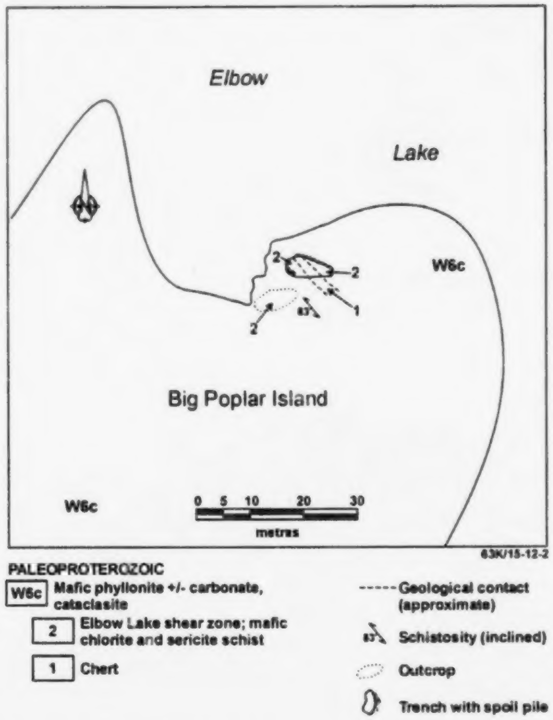
Elbow
Lake
2
2
W6c
1
63
2
Big Poplar Island
W6c
0 5 10 20 30
metres
63K/15-12-2
PALEOPROTEROZOIC
W6c Mafic phyllonite +/- carbonate, cataclasite
2 Elbow Lake shear zone; mafic chlorite and sericite schist
1 Chert
Geological contact (approximate)
63 Schistosity (inclined)
Outcrop
Trench with spoil pile

Figure 12-2: Geology and trench location at June Bug occurrence.

LOCATION: 13

NAME: Florence
UTM: 379870E, 6080605N
AREA: island NE of the north end of Big Poplar Island, Elbow Lake
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage
AIRPHOTO: MB90025-113

EXPLORATION SUMMARY

This occurrence was staked in 1922 by Mr Oliver Dickson (Stockwell, 1935). A trenching and stripping programme was completed, but no additional work has been recorded since Stockwell's examination of the property in 1934.

The area is now completely overgrown and exposures are generally thickly covered with moss. No trenches were located during a property visit in 1992.

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 13-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by schists (unit W6c) of the Elbow Lake shear zone (Galley *et al.*, 1987, 1989; Syme, 1990, 1991, 1992). In this area the structure has a total thickness of approximately 2200 m (Syme and Whalen, 1992). Relatively unsheared gabbro and diorite (unit P2a) and basalt (unit F1a) occur as blocks within the shear zone.

The following description is taken mainly from Stockwell (1935) and Galley (field notes, 1987). At the occurrence an unfoliated chert unit with an average thickness of 3 to 6 m trends 300° for most of its length, but trends 350° at its south end. At one point the chert unit thickens abruptly to approximately 15 m. The chert is intensely fractured and crosscut by an irregular network of coarse-grained milky quartz veins and stringers up to 30 cm thick. Contacts of this unit with the enclosing mafic volcanic schists are irregular. To the south, the chert is in contact with mafic tuff breccia. The mafic schist trends 355°/80° E.

MINERALIZATION

The chert and crosscutting coarse-grained quartz veins carry disseminated pyrite and arsenopyrite, and reportedly contain coarse native gold (Stockwell, 1935). Fractures within the chert are commonly coated with carbonate, hematite and pyrite.

GEOCHEMICAL DATA

Stockwell (1935) reported that a chip sample of chert mineralized with magnetite and pyrite assayed 12.5 g Au/t (0.40 oz. gold/ton).

CLASSIFICATION

Chemical sediment type deposit; silicate facies iron formation. Contains milky quartz veins, and is located within the Elbow Lake shear zone.

REFERENCES

Galley, A.G., Ames, D.E. and Franklin, J.M.

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1989: Results of studies on the gold metallogeny of the Flin Flon belt; in Investigations by the Geological Survey of Canada in Manitoba and Saskatchewan during the 1984-1989 Mineral Development Agreements, Geological Survey of Canada, Open File 2133, pp.25-32.

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1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

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Syme, E.C. and Whalen, J.B.

1992: Geology, Elbow Lake, Manitoba; Preliminary 1:20 000 map, Shield-Margin Project, File ELBOW92.PS.

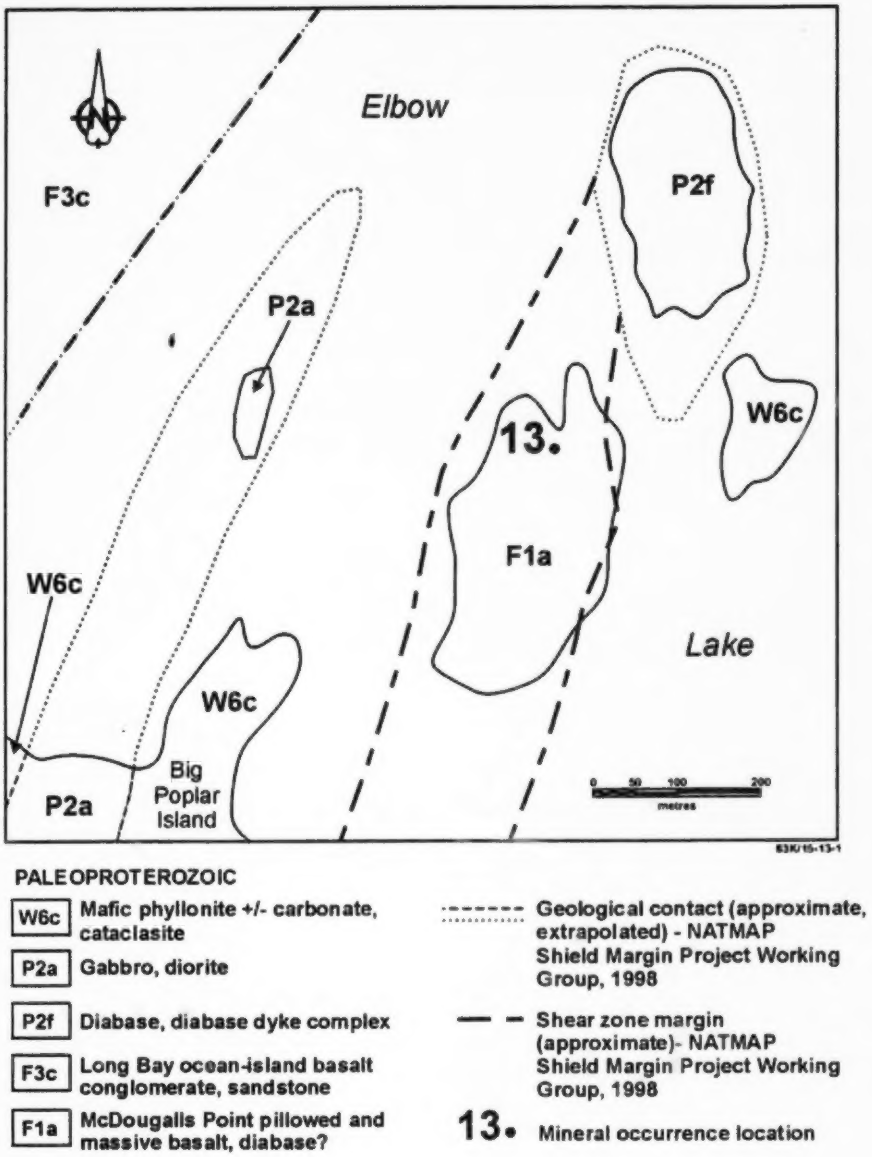
N
Elbow
F3c
P2f
P2a
W6c
13.
F1a
Lake
W6c
W6c
Big
Poplar
Island
P2a
0 50 100 200
metres
63K/15-13-1
PALEOPROTEROZOIC
W6c Mafic phyllonite +/- carbonate, cataclasite
P2a Gabbro, diorite
P2f Diabase, diabase dyke complex
F3c Long Bay ocean-island basalt conglomerate, sandstone
F1a McDougalls Point pillowed and massive basalt, diabase?
Geological contact (approximate, extrapolated) - NATMAP Shield Margin Project Working Group, 1998
Shear zone margin (approximate)- NATMAP Shield Margin Project Working Group, 1998
13• Mineral occurrence location

Figure 13-1: Geological setting of Florence occurrence.

LOCATION: 14

NAME: Gold Dust
UTM: 381120E, 6080475N
AREA: island near east side of Elbow Lake, north of Leaping Moose Island (informal name)
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage
AIRPHOTO: MB90025-55

EXPLORATION SUMMARY

The claim was staked in 1921 by Mr Thomas Hanna. Several trenches were excavated along the southeastern shore of the island (Stockwell, 1935). No additional work has been recorded since that time.

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 14-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). This occurrence is situated in the eastern part of the Elbow Lake shear zone (unit W6c) (Galley *et al.*, 1987, 1989; Syme, 1990, 1991, 1992). In this area the structure is approximately 2300 m thick (Syme and Whalen, 1992). Massive diabase (unit P2f) outcrops to the west in the central part of Gold Dust Island.

The trench locations are shown in Fig. 14-2. Galley (field notes, 1987) has examined the geology of this occurrence. The mineralization is hosted by chlorite-carbonate-magnetite schist that appears to have been derived from a series of mafic volcanic flow and volcaniclastic rocks, exposed to the south and east. The dominant foliation in the north part of the occurrence trends 010°. This schistosity has been crenulated with the development of an axial planar cleavage at 035°. At the south end of the small bay, epidotized chloritic basalts are strongly foliated at 170° and show an axial planar crenulation cleavage at 025°. Several generations of quartz veins are present at this occurrence. North-south trending veins show relatively little macroscopic deformation compared to a boudinaged earlier set that trends 120°. East-west trending quartz boudins show unspecified rotation in the 025° foliation.

MINERALIZATION

A zone of schist up to 20 m thick with discontinuous boudinaged quartz veins and veinlets has been traced for approximately 150 m. Individual quartz masses are up to 1 m thick and 3 m long. The northern third of this zone contains up to 70% disseminated pyrite in both the quartz veins and schist. Finely disseminated magnetite is common within the schist, much of which is calcareous. Pitted limonitic areas are common.

GEOCHEMICAL DATA

Stockwell (1935) reported that the owner obtained the following assays:

21.9 g Au/t (0.70 oz. Au/ton) across approximately 10 m (32 ft.) in schist

3.8 to 5.9 g Au/t (0.12 to 0.19 oz. Au/ton) -grab samples of sulphides and schist

6.6 g Au/t (0.21 oz. Au/ton) -grab sample of unspecified material

CLASSIFICATION

Vein type deposit; multiple veins or lenses. Associated with the Elbow Lake shear zone.

REFERENCES

A.F. 92654; Cancelled Assessment File, Manitoba Industry, Trade and Mines, Minerals Division.

Galley, A.G., Ames, D.E. and Franklin, J.M.

1987: Geological setting of gold mineralization in the Elbow Lake region, Manitoba; in Manitoba Energy and Mines, Minerals Division, Report of Field Activities, 1987, pp.175-177.

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NATMAP Shield Margin Project Working Group

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Syme, E.C. and Whalen, J.B.

1992: Geology, Elbow Lake, Manitoba; Preliminary 1:20 000 map, Shield-Margin Project, File ELBOW92.PS.

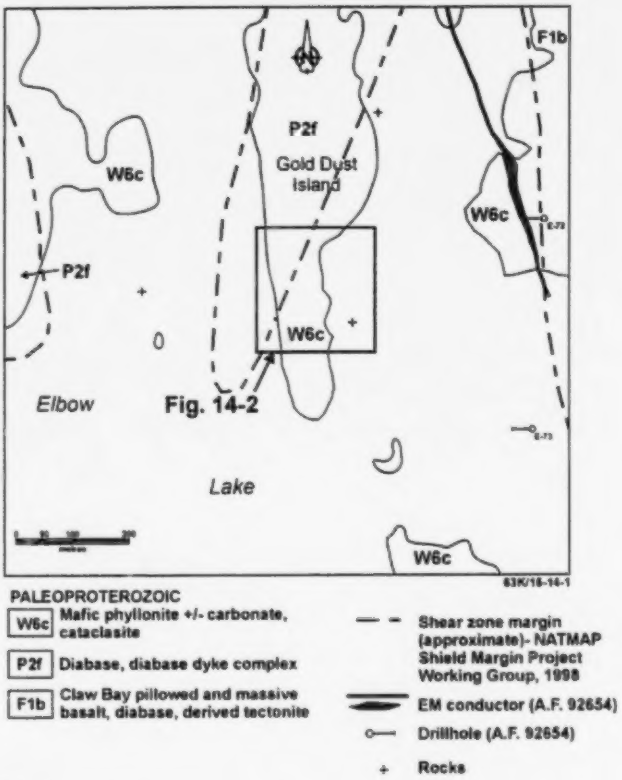
F1b
P2f
Gold Dust Island
W6c
W6c
P2f
W6c
Elbow
Fig. 14-2
Lake
W6c
0 50 100 200
metres
63K/16-14-1
PALEOPROTEROZOIC
W6c Mafic phyllonite +/- carbonate, cataclasite
P2f Diabase, diabase dyke complex
F1b Claw Bay pillowed and massive basalt, diabase, derived tectonite
Shear zone margin (approximate)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 92654)
Drillhole (A.F. 92654)
Rocks

Figure 14-1: Geological setting of Gold Dust occurrence.

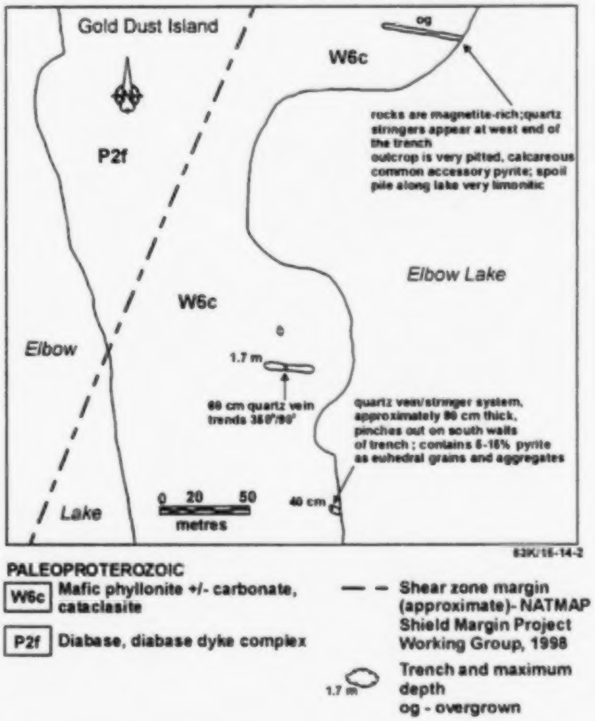
Gold Dust Island
og
W6c
P2f
rocks are magnetite-rich;quartz stringers appear at west end of the trench
outcrop is very pitted, calcareous common accessory pyrite; spoil pile along lake very limonitic
Elbow Lake
W6c
Elbow
1.7 m
60 cm quartz vein trends 350°/90°
quartz vein/stringer system, approximately 90 cm thick, pinches out on south walls of trench ; contains 5-15% pyrite as euhedral grains and aggregates
Lake
0 20 50
metres
40 cm
63K/16-14-2
PALEOPROTEROZOIC
W6c Mafic phyllonite +/- carbonate, cataclasite
P2f Diabase, diabase dyke complex
Shear zone margin (approximate)- NATMAP Shield Margin Project Working Group, 1998
1.7 m Trench and maximum depth
og - overgrown

Figure 14-2: Geology and trench locations at Gold Dust occurrence.

LOCATION: 15

NAME: Century Fraction
UTM: 380930E, 6081305N
AREA: island near east side of Elbow Lake, north of Leaping Moose Island (informal name)
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage
AIRPHOTO: MB90025-54

EXPLORATION SUMMARY

The claim was staked in 1921 by Mr Thomas Hanna. The occurrence is exposed in a single trench (Stockwell, 1935).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 15-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by schists (unit W6c) of the Elbow Lake shear zone (Galley *et al.*, 1987, 1989; Syme, 1990, 1991, 1992). In this area the structure is approximately 1700 m thick (Syme and Whalen, 1992).

The occurrence is located in the central part of the Elbow Lake shear zone within a sequence of felsic and mafic phyllonites. Galley (field notes, 1987) indicates that this occurrence is hosted by a 60 m thick sequence of argillite, chert breccia and chlorite-magnetite schist. This assemblage is bounded to the east by a 20 to 30 m thick aphanitic quartz-feldspar porphyritic rock, probably a dyke, and diabase (unit P2f), which outcrop in the central part of the island (Fig. 15-1). Lenses and irregular masses of blue grey chert to 1.2 m thick, containing thin ribbons of magnetite and disseminated euhedral pyrite, occur in ferruginous argillite, chlorite-magnetite schist and quartz porphyry schist.

MINERALIZATION

The chert is crosscut by numerous sugary white quartz veins. Quartz porphyry schist contains minor disseminated pyrite.

GEOCHEMICAL DATA

None.

CLASSIFICATION

Chemical sediment; silicate facies iron formation. As boudins within the Elbow Lake shear zone, spatially associated with a quartz-feldspar porphyry dyke(?).

REFERENCES

A.F. 92654; Cancelled Assessment File, Manitoba Industry, Trade and Mines, Minerals Division.

Galley, A.G., Ames, D.E. and Franklin, J.M.

1987: Geological setting of gold mineralization in the Elbow Lake region, Manitoba; in Manitoba Energy and Mines, Minerals Division, Report of Field Activities, 1987, pp.175-177.

1989: Results of studies on the gold metallogeny of the Flin Flon belt; in Investigations by the Geological Survey of Canada in Manitoba and Saskatchewan during the 1984-1989 Mineral Development Agreements, Geological Survey of Canada, Open File 2133, pp.25-32.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Stockwell, C.H.

1935: Gold Deposits of the Elbow-Morton Area, Northern Manitoba; Geological Survey of Canada, Memoir 186, 74 pp.

Syme, E.C.

1990: Elbow Lake project (part of NTS 63K/15W); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1990, pp.49-57.

1991: Elbow Lake project - Part A: supracrustal rocks and structural setting; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1991, pp.14-27.

1992: Elbow Lake Project - Part A: Supracrustal rocks; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1992, pp.32-46.

Syme, E.C. and Whalen, J.B.

1992: Geology, Elbow Lake, Manitoba; Geological Survey of Canada, Preliminary 1:20 000 map, Shield-Margin Project, File ELBOW92.PS.

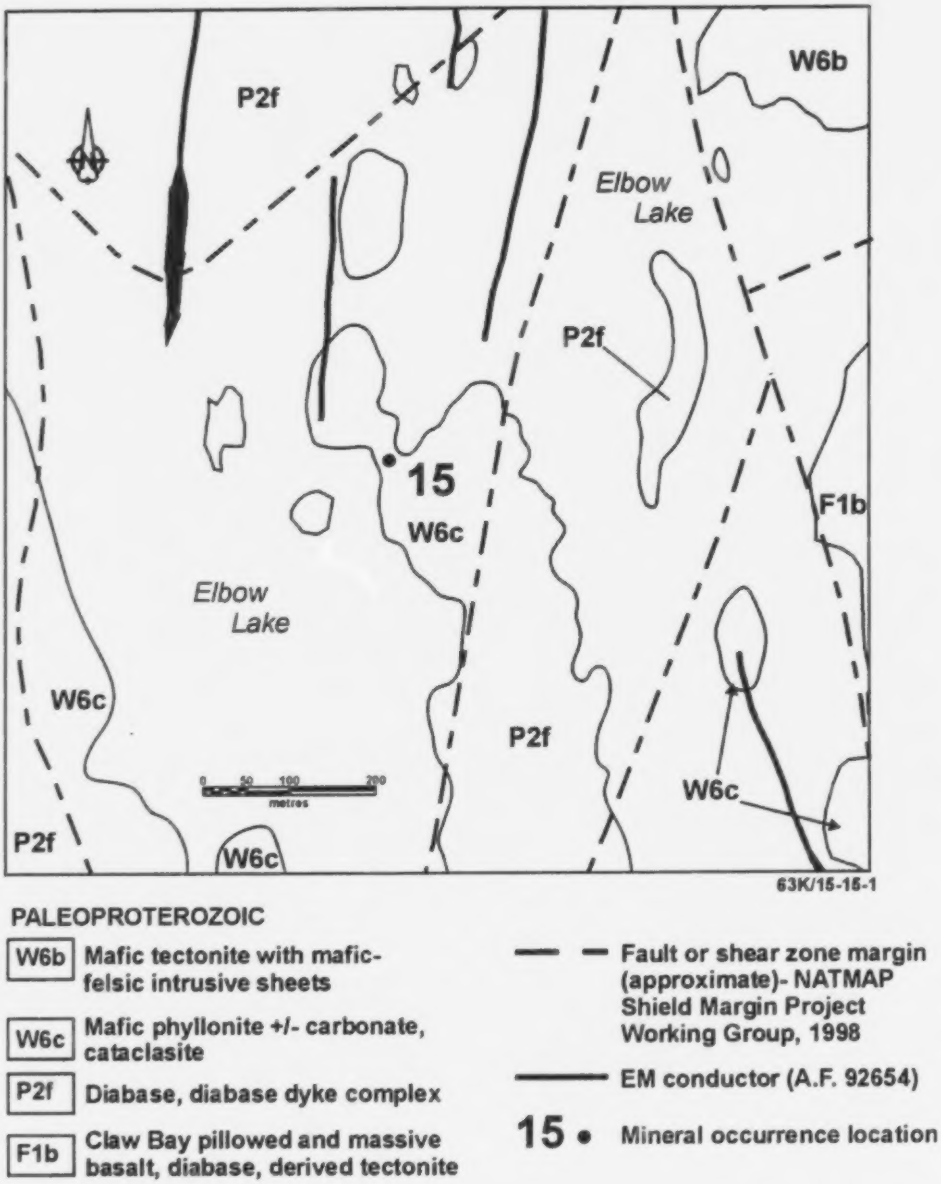
W6b
P2f
Elbow
Lake
P2f
15
W6c
F1b
Elbow
Lake
W6c
P2f
W6c
P2f
W6c
0 50 100 200
metres
63K/15-15-1
PALEOPROTEROZOIC
W6b Mafic tectonite with mafic-felsic intrusive sheets
W6c Mafic phyllonite +/- carbonate, cataclasite
P2f Diabase, diabase dyke complex
F1b Claw Bay pillowed and massive basalt, diabase, derived tectonite
Fault or shear zone margin (approximate)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 92654)
15 • Mineral occurrence location

Figure 15-1: Geological setting of Century Fraction occurrence.

LOCATION: 16

NAME: Van No. 1 and No. 2
UTM: 381890E, 6081775N
AREA: east side of Elbow Lake, SE of Moen Bay
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage
AIRPHOTO: MB90025-55

EXPLORATION SUMMARY

The Van No. 1 and No. 2 claims were staked in 1933 by Mr John Vanberg. Several quartz veins and quartz masses containing schist xenoliths were exposed in a number of shallow trenches (Stockwell, 1935). In 1970 Mr H.N. Willis located claim CB 3160 over the occurrence and transferred ownership to the Noranda Exploration Company Limited. A single 71 m (232 ft.) diamond drill hole was drilled (Mineral Inventory File No. 786). No significant results were obtained.

Much of the area is now covered with new growth and deadfall, and examination of existing exposures proved difficult.

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 16-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by mafic tectonite containing mafic to felsic intrusive sheets (unit W6b). The East Elbow tonalite stock (unit P6a) occurs to the east of the occurrence, and plagioclase-phyric pillowed Moen Bay basalt (unit F1c) is exposed to the west.

Galley (field notes, 1987) examined the occurrence and the following description is taken in part from his observations. The area at the occurrence is underlain by a 300 m thick sequence of felsic and mafic volcaniclastic rocks that is intruded by several quartz porphyritic dykes originating from the East Elbow tonalite. The volcaniclastic rocks are made up of layers 0.5 to 5 m thick consisting of chlorite, chlorite-magnetite, chlorite-sericite, chlorite-carbonate and tremolite-quartz schist, and cherty layers made up of dark to light grey silica with finely disseminated pyrite. Thin layers of felsic lapilli tuff are present SE of the Van No. 2 occurrence. This sequence is approximately 300 m thick. All of the rocks show a strong penetrative foliation at 350-010°, parallel to the Elbow Lake shear zone, and dip 65-75°E.

MINERALIZATION

In a trench at the Van No. 1 occurrence, a calcareous tuff layer at least 4 m thick contains up to 25% fine-grained disseminated pyrite. Most of the rocks are weathered and stained with iron oxides. The tuff is bounded to the west by a 1 m thick unit of interlayered chert and chlorite schist, and to the east by a quartz porphyritic tonalite dyke.

At the Van No. 2 occurrence a quartz vein up to 65 cm thick is poorly exposed for about 150 m along a 015-030° trend. The quartz vein is weakly laminated and contains foliated chloritic inclusions. Minor pyrite and chalcopyrite are associated with the inclusions.

GEOCHEMICAL DATA

Stockwell (1935) reported the owner of the Van No. 2 occurrence obtained values of 15.07 g Au/t (0.44 oz. Au/ton) and 5.82 g Au/t (0.17 oz. Au/ton) in grab samples of quartz with sulphides. Galley (field notes, 1987) obtained an average of 6 ppb Au from 2 pyrite-rich calcareous tuff samples collected at the Van No. 1 occurrence.

CLASSIFICATION

The Van No. 1 occurrence appears to be a chemical sediment type deposit; sulphide facies iron formation. The Van No. 2 occurrence is a vein type deposit; single vein.

REFERENCES

Mineral Inventory File No. 786

Manitoba Energy and Mines, Minerals Division

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Stockwell, C.H.

1935: Gold Deposits of the Elbow-Morton Area, Northern Manitoba; Geological Survey of Canada, Memoir 186, 74pp.

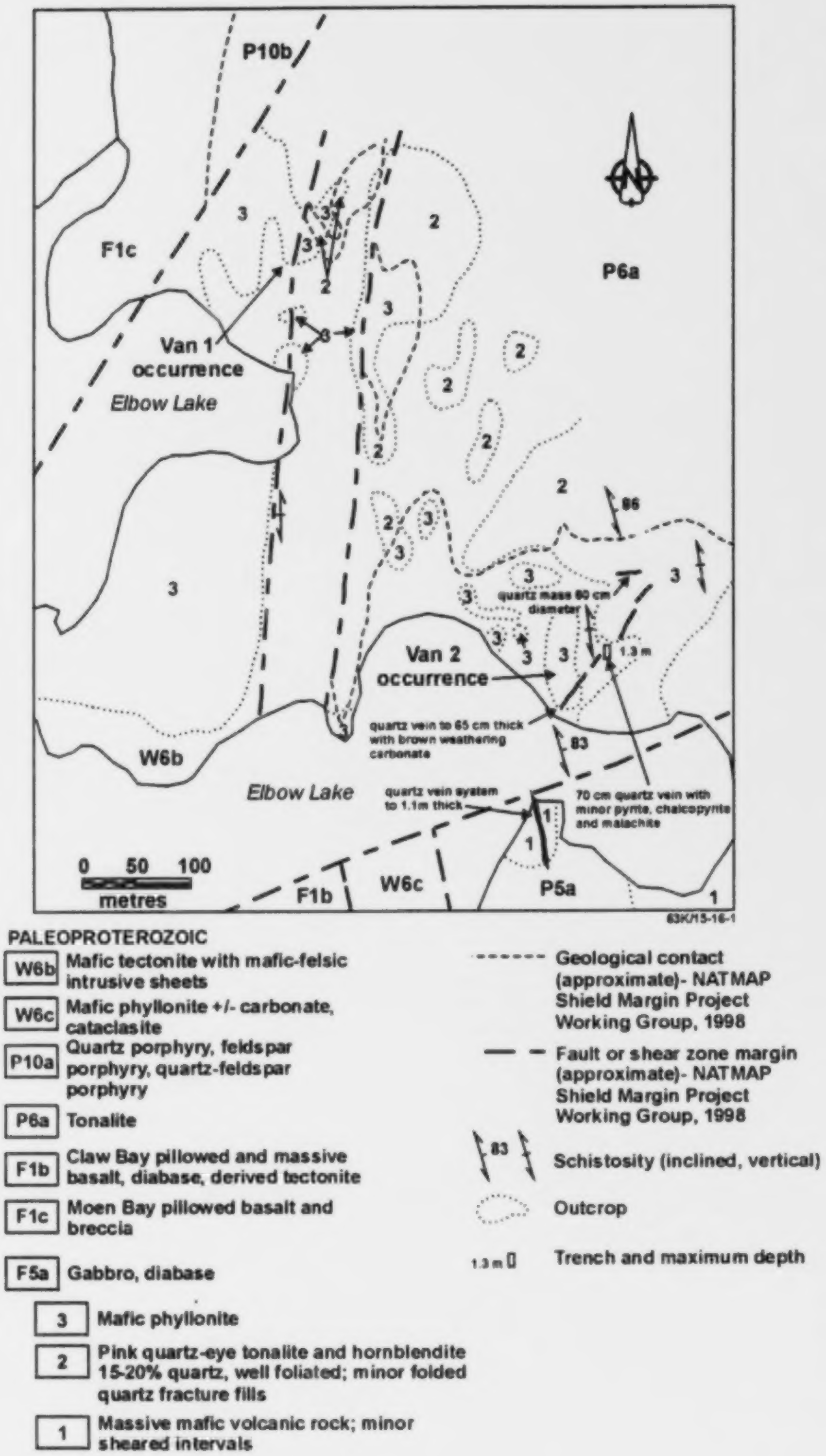
P10b
F1c
3
3
3
2
2
P6a
Van 1 occurrence
Elbow Lake
3
2
2
2
2
86
2
3
3
3
3
quartz mass 80 cm diameter
3
3
3
3
1.3 m
Van 2 occurrence
quartz vein to 65 cm thick with brown weathering carbonate
83
W6b
Elbow Lake
quartz vein system to 1.1m thick
70 cm quartz vein with minor pyrite, chalcopyrite and malachite
1
1
0 50 100
metres
F1b
W6c
P5a
1
63K/15-16-1
PALEOPROTEROZOIC
W6b Mafic tectonite with mafic-felsic intrusive sheets
W6c Mafic phyllonite +/- carbonate, cataclasite
P10a Quartz porphyry, feldspar porphyry, quartz-feldspar porphyry
P6a Tonalite
F1b Claw Bay pillowed and massive basalt, diabase, derived tectonite
F1c Moen Bay pillowed basalt and breccia
F5a Gabbro, diabase
3 Mafic phyllonite
2 Pink quartz-eye tonalite and hornblendite 15-20% quartz, well foliated; minor folded quartz fracture fills
1 Massive mafic volcanic rock; minor sheared intervals
Geological contact (approximate)- NATMAP Shield Margin Project Working Group, 1998
Fault or shear zone margin (approximate)- NATMAP Shield Margin Project Working Group, 1998
83
Schistosity (inclined, vertical)
Outcrop
1.3 m
Trench and maximum depth

Figure 16-1: Geology and trench location at Van No. 1 and No. 2 occurrences.

LOCATION: 17

NAME: Mack
UTM: 381560E, 6082085N
AREA: east side of Elbow Lake, SE of Moen Bay
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage
AIRPHOTO: MB90025-55

EXPLORATION SUMMARY

The Mack claim was staked in 1924 by Mr P. Johnson. In 1925 an area of quartz and schist had been explored in several trenches and a shaft approximately 8.5 m (28 ft.) deep (Stockwell, 1935). In 1946 approximately 76 m (250 ft.) of diamond drilling was recorded and in 1947 another 64 m (210 ft.) were drilled. An EM survey and diamond drilling were recorded in 1957. Noranda Exploration Company performed an EM and magnetic survey over the property in 1972 (Mineral Inventory File No. 788).

Much of the area is now covered with new growth and deadfall, and outcrops are poorly exposed.

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 17-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by mafic tectonite containing mafic to felsic intrusive sheets (unit W6b). The East Elbow tonalite stock (unit P6a) occurs to the east of the occurrence, and plagioclase-phyric pillowed Moen Bay basalt (unit F1c) is exposed to the west.

Galley (field notes, 1987) examined the Mack property and the following description is taken largely from his observations. The area at the occurrence is underlain by a 300 m thick sequence of interbanded felsic and mafic tectonites that are intruded by several quartz porphyritic dykes originating from the East Elbow tonalite. The tectonites consist of chlorite schist, chlorite-magnetite schist, chlorite-sericite schist, chlorite-carbonate schist, and tremolite-quartz schist layers 0.5 to 5 m thick. Cherty layers made up of dark to light grey silica with finely disseminated pyrite are also present. Thin layers of felsic lapilli tuff are present west of the Mack occurrence. All of the rocks show a strong penetrative foliation trending 350-010° and dipping 65-75°E, parallel to the Elbow Lake shear zone.

MINERALIZATION

Deformed quartz veins occur in banded, strongly schistose, calcareous chlorite and quartz-Fe-carbonate schist. The shaft has been sunk on a 2 by 5 m mass of banded grey and white quartz containing chlorite-tourmaline aggregates, with disseminated pyrite, chalcopyrite and pyrrhotite. Boudinaged quartz – Fe-carbonate veins occur in the schist for approximately 15 m north of the shaft. These have an aggregate thickness of up to 75 cm within a total schist thickness of 2 m. Beyond this area, deformed quartz and Fe-carbonate veins decrease in abundance, occurring as narrow stringers and lenses. Disseminated pyrite is a common accessory in both the schist and the veins.

Stockwell (1935) indicates that coarse gold had reportedly been recovered from the shaft.

GEOCHEMICAL DATA

Stockwell (1935) reported that the owner obtained an assay of 9.25 g Au/t (0.27 oz. Au/ton) from a channel sample taken from the bottom of the shaft.

CLASSIFICATION

Vein type deposit; multiple veins or lenses.

REFERENCES

Mineral Inventory File No. 788

Manitoba Energy and Mines, Minerals Division

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Stockwell, C.H.

1935: Gold Deposits of the Elbow-Morton Area, Northern Manitoba; Geological Survey of Canada, Memoir 186, 74pp.

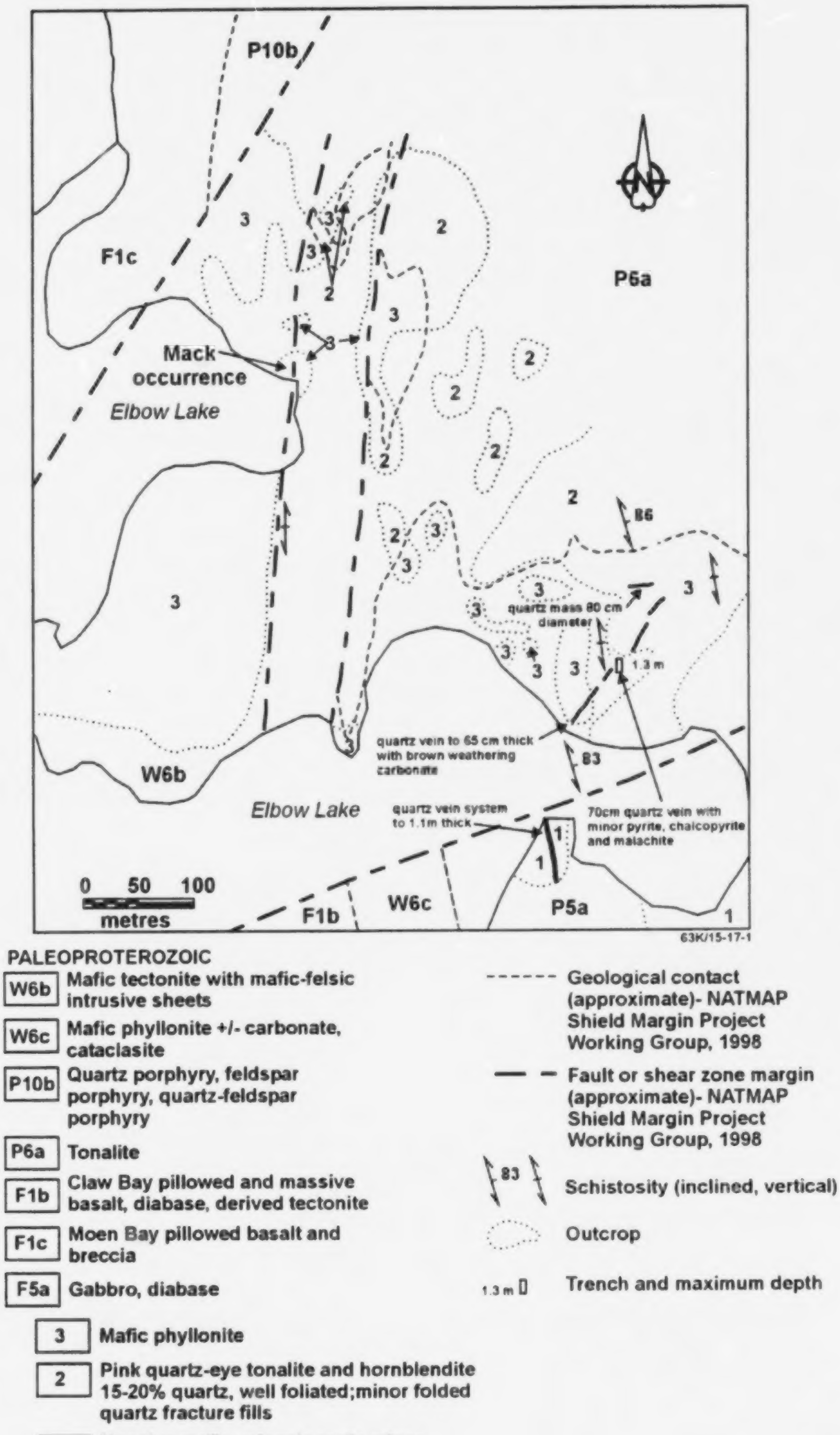
P10b
F1c
3
3
3
2
2
3
Mack occurrence
Elbow Lake
P6a
2
2
2
2
2
86
2
3
3
3
3
3
quartz mass 80 cm diameter
3
3
3
1.3 m
quartz vein to 65 cm thick with brown weathering carbonite
83
W6b
Elbow Lake
quartz vein system to 1.1m thick
70cm quartz vein with minor pyrite, chalcopyrite and malachite
1
1
0 50 100
metres
F1b
W6c
P5a
1
63K/15-17-1
PALEOPROTEROZOIC
W6b Mafic tectonite with mafic-felsic intrusive sheets
W6c Mafic phyllonite +/- carbonate, cataclasite
P10b Quartz porphyry, feldspar porphyry, quartz-feldspar porphyry
P6a Tonalite
F1b Claw Bay pillowed and massive basalt, diabase, derived tectonite
F1c Moen Bay pillowed basalt and breccia
F5a Gabbro, diabase
3 Mafic phyllonite
2 Pink quartz-eye tonalite and hornblendite 15-20% quartz, well foliated;minor folded quartz fracture fills
1 Massive mafic volcanic rock; minor sheared intervals
Geological contact (approximate)- NATMAP Shield Margin Project Working Group, 1998
Fault or shear zone margin (approximate)- NATMAP Shield Margin Project Working Group, 1998
83
Schistosity (inclined, vertical)
Outcrop
1.3 m
Trench and maximum depth

Figure 17-1: Geology of Mack occurrence.

LOCATION: 18

NAME: I.X.L.
UTM: 380230E, 6082085N
AREA: on point along west shore of Moen Bay, Elbow Lake
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage
AIRPHOTO: MB90025-117

EXPLORATION SUMMARY

Three trenches were excavated prior to Stockwell's 1934 visit to the occurrence (Stockwell, 1935). No further work appears to have been done since that time.

The trenches are located close to the shoreline and are now completely overgrown.

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 18-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The occurrence is located near the western margin of the Elbow Lake shear zone (unit W6c) (Galley *et al.*, 1987, 1989; Syme, 1990, 1991, 1992). In this area the structure is approximately 1000 m thick (Syme and Whalen, 1992). Pre-shear lithologies such as Long Bay basaltic conglomerate and diabase can be recognized in this part of the shear zone.

The occurrence is hosted by several subvertical chert bodies within chlorite-carbonate-magnetite schist (Fig. 18-2). The schistosity strikes 012° and dips 81°E. The schist is calcareous and Fe-carbonate stringers occur parallel to the foliation. Calcite stringers crosscut the schist.

The chert is vaguely banded, striking 160° and dipping vertically, and is variably coloured white, red (jasper), brown and black. In some areas the banding shows a fine crenulation. Specularite is common in the chert as fracture coatings. In outcrops a few metres to the north of the trenches, chert fragments several centimetres long occur in magnetite-rich schist.

MINERALIZATION

The chert units are crosscut by irregular white quartz veins. In some areas the quartz forms the matrix to chert fragment breccia. Both the vein quartz and the chert contain minor (<1%) pyrite as disseminated euhedral grains.

GEOCHEMICAL DATA

None.

CLASSIFICATION

Vein type deposit; multiple veins or lenses. Associated with silicate facies cherty iron formation within the Elbow Lake shear zone.

REFERENCES

A.F. 90516, 90517; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

Galley, A.G., Ames, D.E. and Franklin, J.M.

1987: Geological setting of gold mineralization in the Elbow Lake region, Manitoba; in Manitoba Energy and Mines, Minerals Division, Report of Field Activities, 1987, pp.175-177.

1989: Results of studies on the gold metallogeny of the Flin Flon belt; in Investigations by the Geological Survey of Canada in Manitoba and Saskatchewan during the 1984-1989 Mineral Development Agreements, Geological Survey of Canada, Open File 2133, pp.25-32.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Stockwell, C.H.

1935: Gold Deposits of the Elbow-Morton Area, Northern Manitoba; Geological Survey of Canada, Memoir 186, 74pp.

Syme, E.C.

1990: Elbow Lake project (part of NTS 63K/15W); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1990, pp.49-57.

1991: Elbow Lake project - Part A: supracrustal rocks and structural setting; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1991, pp.14-27.

1992: Elbow Lake Project - Part A: Supracrustal rocks; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1992, pp.32-46.

Syme, E.C. and Whalen, J.B.

1992: Geology, Elbow Lake, Manitoba; Geological Survey of Canada, Preliminary 1:20 000 map, Shield-Margin Project, File ELBOW92.PS.

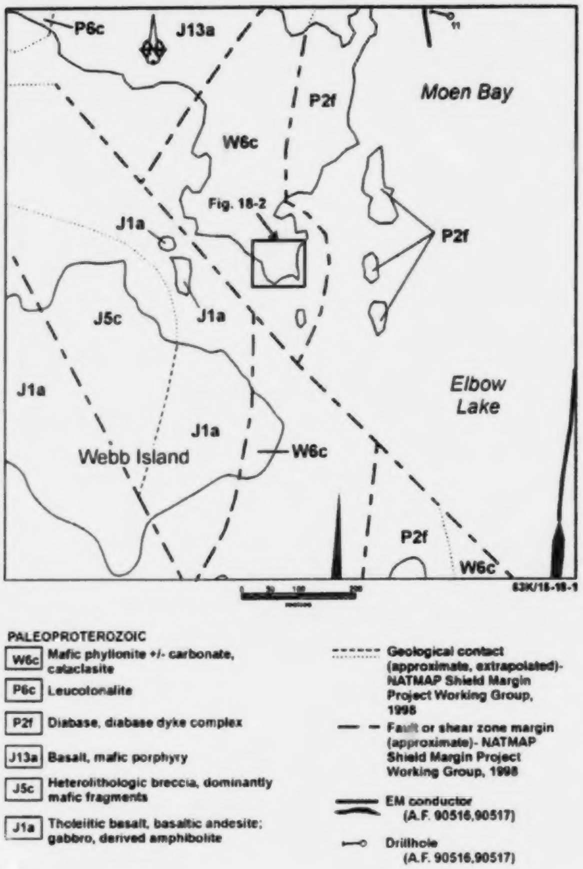
P6c
J13a
P2f
Moen Bay
W6c
Fig. 18-2
J1a
P2f
J5c
J1a
J1a
Elbow Lake
J1a
Webb Island
W6c
P2f
W6c
63K/15-18-1
PALEOPROTEROZOIC
W6c Mafic phyllonite +/- carbonate, cataclasite
P6c Leucotonalite
P2f Diabase, diabase dyke complex
J13a Basalt, mafic porphyry
J5c Heterolithologic breccia, dominantly mafic fragments
J1a Tholeiitic basalt, basaltic andesite; gabbro, derived amphibolite
Geological contact (approximate, extrapolated)- NATMAP Shield Margin Project Working Group, 1998
Fault or shear zone margin (approximate)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 90516,90517)
Drillhole (A.F. 90516,90517)

Figure 18-1: Geological setting of I.X.L. occurrence.

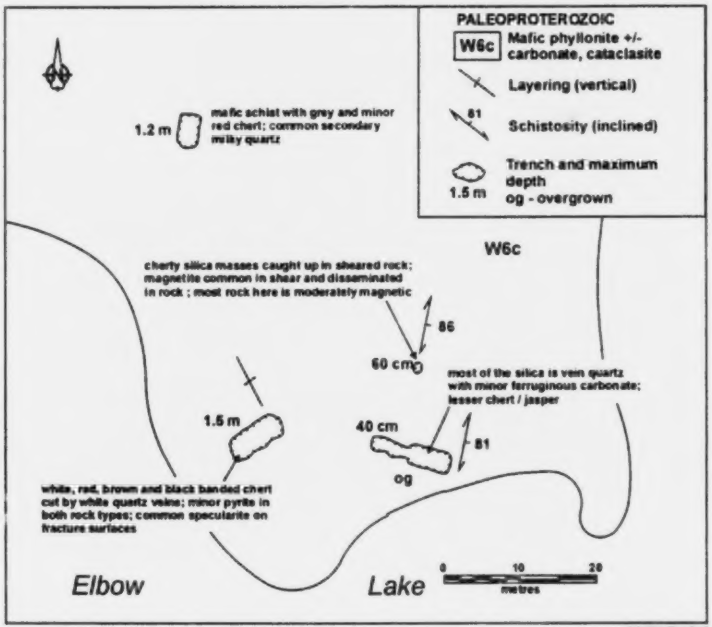
PALEOPROTEROZOIC
W6c Mafic phyllonite +/- carbonate, cataclasite
Layering (vertical)
81
Schistosity (inclined)
Trench and maximum depth
1.5 m
og - overgrown
1.2 m
mafic schist with grey and minor red chert; common secondary milky quartz
W6c
cherty silica masses caught up in sheared rock; magnetite common in shear and disseminated in rock ; most rock here is moderately magnetic
86
60 cm
most of the silica is vein quartz with minor ferruginous carbonate; lesser chert / jasper
1.5 m
40 cm
81
og
white, red, brown and black banded chert cut by white quartz veins; minor pyrite in both rock types; common specularite on fracture surfaces
Elbow
Lake
0
10
20
metres
63K/15-18-2

Figure 18-2: Trench locations and geology of I.X.L. occurrence.

LOCATION: 19

NAME: Webb-Garbutt (Stockwell, 1935)
Century mine (McGlynn, 1959)
UTM: 379750E, 6081875N
AREA: central part at east end of Webb Island, Elbow Lake
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage
AIRPHOTO: MB90025-117

EXPLORATION SUMMARY

The claims were staked in 1919 by Messrs. Thomas R. Webb and William Garbutt. By 1929 a shaft had been sunk to approximately 18 m (60 feet) and a 7 m (23 ft.) crosscut completed at a depth of 17 m (56 ft.) (Wright, 1930; Mineral Inventory File 769). Some drifting was done from the end of the crosscut. A small mining plant and mill were installed but moved to the Murray occurrence at the south end of Elbow Lake in the winter of 1934 (Stockwell, 1935). In 1936 and 1937 approximately 1390 m (4560 ft.) of diamond drilling was completed by the Century Mining Corporation. Underground development continued during this period, and by the end of 1937 a 3 compartment shaft had been sunk to a depth of approximately 88 m (288 ft.). Levels were established at 38 (125 ft.) and 76 m (250 ft.) and some drifting was completed. In 1938 1068 m (3504 ft.) of diamond drilling was completed. Reserves to that point were estimated at 91 200 tonnes with an average grade of 10.97 g Au/t (0.32 oz. Au/ton) and an additional 86 175 tonnes with a grade of 9.25 g Au/t (0.31 oz. Au/ton) (The Northern Miner, February 7, 1941).

In 1941 a 90 tonne/day mill was constructed. After a short period of operation, the mill was shut down in January 1942, and all work ceased. The only recorded production from this deposit occurred during this time: a gold bar weighing approximately 1854 g (59.6 oz.) was poured two weeks before the operation shut down. Developments at that time consisted of a raise from the 38 m level to surface, and a partially completed raise connecting the 76 to the 38 m level. Stopes were prepared on the 38 m level for a length of 46 m, and similar development was partially completed on the 76 m level.

Work resumed on the property in 1946 when the shaft was deepened to 161 m (528 ft.), with levels established at 114 (375 ft.) and 153 m (500 ft.). Development work proceeded on the lower two levels. In 1951, 2951 m ((9682 ft.) of diamond drilling was completed in 6 holes.

In 1980 Ram Petroleums estimated proven reserves on the property at 272 000 tonnes grading 11.99 g Au/tonne (0.35 oz. Au/ton), with the mineralized zones open along strike and to depth (Mineral Policy Sector, Ram Petroleums Limited). Geological, geochemical, electromagnetic and magnetic surveys suggested extensions of the known veins. Additional geophysical surveys and diamond drilling were performed in 1981.

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 19-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The deposit is located approximately 400 m west of the western margin of the Elbow Lake shear zone (unit W6c) (Galley *et al.*, 1987, 1989; Syme, 1990, 1991, 1992). The area is underlain by amoeboid pillow breccia and pillowed flows of the Webb Island basalt (unit J1a) intercalated with aphyric and brecciated Century rhyolite (unit J5c) (Syme and Whalen, 1992).

Galley (field notes, 1987) mapped the occurrence and this description is taken largely from his observations. The rocks at the occurrence strike 160° and dip vertically to steeply southwest (Fig. 19-2 to-6).

The mafic rocks consist of massive and pillowed flows, monolithic and heterolithic tuff breccia and breccia. The heterolithic breccia contains angular blocks of rhyolite to 1 m and smaller subangular blocks of basalt. Quartz-phyric to aphanitic rhyolite forms two NW-trending units within the mafic sequence. The northerly unit consists of monolithic, coarse-grained, layered lapilli tuff to tuff breccia containing rhyolite clasts to 25 cm. The southerly unit consists of massive aphanitic quartz-phyric rhyolite with no primary internal textures.

Mafic and felsic dykes crosscut the volcanic rock sequence. Fine-grained diorite dykes ranging from less than 1 m to over 10 m in thickness cut both the felsic and mafic volcanic rocks. Quartz porphyry dykes and aplite stringers cut the diorite.

Depositional indicators such as amygdule abundance and graded bedding indicate that stratigraphic tops are to the SW. All the rocks have been affected by a bedding parallel penetrative foliation that has flattened pillows and clasts. The margins of the larger dykes are strongly sheared, these shears being further deformed by a set of conjugate NE and SE-trending kink bands. The volcanic rocks contain numerous thin NNW-trending shears that can contain iron stained quartz veins.

MINERALIZATION

Most of the mineralized zone at this deposit is either overgrown or covered with mine waste. The deposit consists of quartz and quartz-Fe carbonate veins crosscutting a 3 m thick quartz porphyry dyke and diorite that it has intruded. Veins within the felsic dyke occur parallel to the dyke margins, as breccia zones and crossing the dyke as NE-trending extensional veins. The mafic dyke that hosts the quartz porphyry also contains abundant quartz veins, most of which are boudinaged parallel to the schistosity.

The vein minerals are dominated by white and grey quartz, and contain accessory Fe-carbonate, chlorite, sericite, bright green phyllosilicate and black tourmaline (schorl). Pyrite, the main sulphide mineral, occurs as euhedral grains 0.5 to 5 mm in size in altered wallrock at the vein margins, in chloritic xenoliths within the veins and in the quartz of the vein. It appears to comprise less than 1% of the vein material. Lesser sulphide minerals include tetrahedrite, galena, pyrrhotite, arsenopyrite, chalcopyrite and sphalerite (Galley, field notes, 1987).

Native gold was found in quartz in the muck pile north of the shaft opening (Fig. 19-5). It is associated with chloritic masses in grey quartz.

GEOCHEMICAL DATA

Stockwell (1935) indicates that the owners had obtained the following assays:

2.05 to 4.79 g Au/t (0.06 to 0.14 oz. Au/ton) across 1.5 m or more (>5 feet) of porphyry and quartz at 4 localities on the Webb claim;

6.85 g Au/t across 2.4 m (0.20 oz. Au/ton across 8 feet) in porphyry with vein quartz in he shaft on the Garbutt claim.

CLASSIFICATION

Vein type deposit; multiple veins or lenses.

REFERENCES

Galley, A.G., Ames, D.E. and Franklin, J.M.

1987: Geological setting of gold mineralization in the Elbow Lake region, Manitoba; in Manitoba Energy and Mines, Minerals Division, Report of Field Activities, 1987, pp.175-177.

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Mineral Inventory File No. 769

Manitoba Energy and Mines, Minerals Division

NATMAP Shield Margin Project Working Group

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Wright, J.F.

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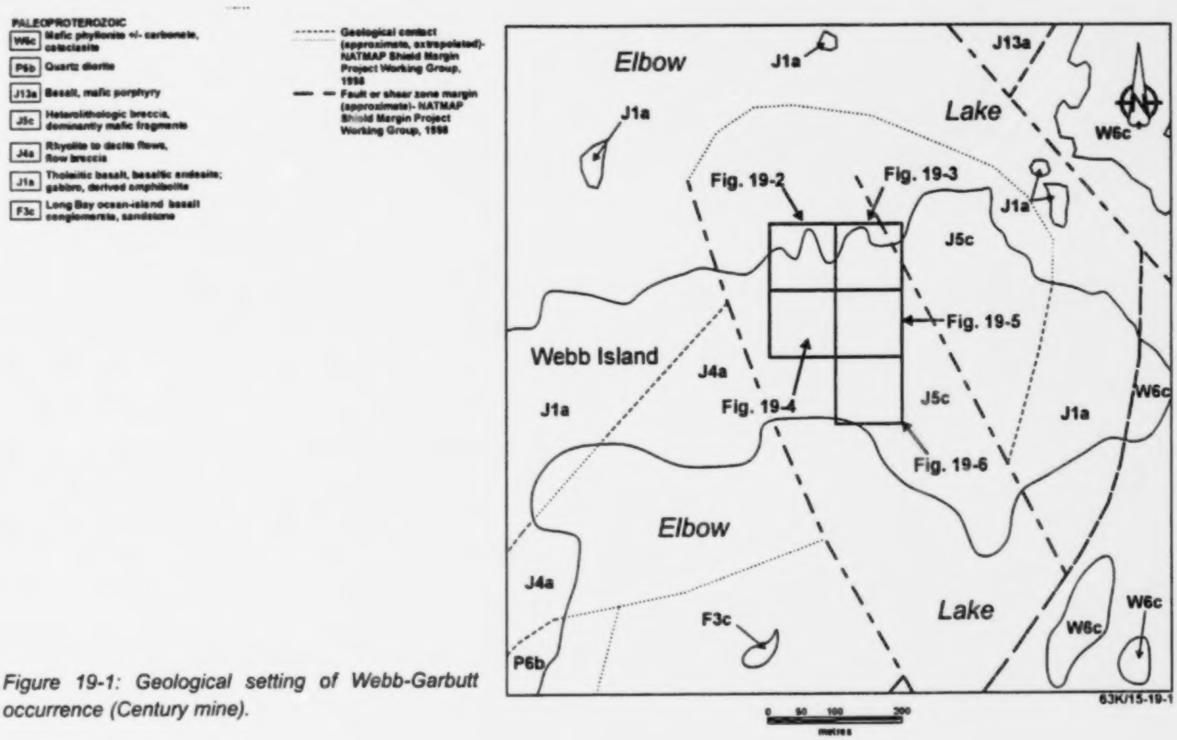
PALEOPROTEROZOIC
W6c Mafic phyllonite +/- carbonate, cataclasite
P6b Quartz diorite
J13a Basalt, mafic porphyry
J5c Heterolithologic breccia, dominantly mafic fragments
J4a Rhyolite to dacite flows, flow breccia
J1a Tholeiitic basalt, basaltic andesite; gabbro, derived amphibolite
F3c Long Bay ocean-island basalt conglomerate, sandstone
Geological contact (approximate, extrapolated)- NATMAP Shield Margin Project Working Group, 1998
Fault or shear zone margin (approximate)- NATMAP Shield Margin Project Working Group, 1998
Elbow
Lake
Webb Island
Elbow
Lake
J1a
J13a
W6c
J5c
J4a
P6b
F3c
Fig. 19-2
Fig. 19-3
Fig. 19-4
Fig. 19-5
Fig. 19-6
0 50 100 200
metres
63K/15-19-1

Figure 19-1: Geological setting of Webb-Garbutt occurrence (Century mine).

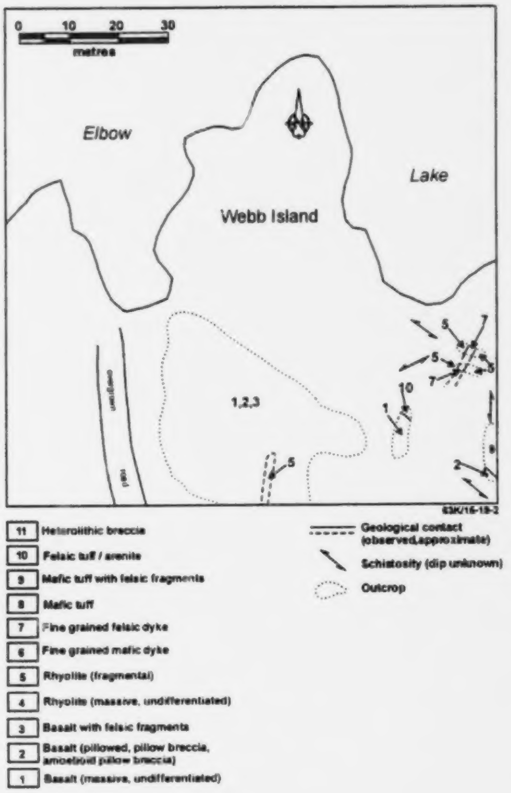
0 10 20 30
metres
Elbow
Lake
Webb Island
1,2,3
overgrown
road
5
7
6
10
1
8
2
63K/15-19-2
11 Heterolithic breccia
10 Felsic tuff / arenite
9 Mafic tuff with felsic fragments
8 Mafic tuff
7 Fine grained felsic dyke
6 Fine grained mafic dyke
5 Rhyolite (fragmental)
4 Rhyolite (massive, undifferentiated)
3 Basalt with felsic fragments
2 Basalt (pillowed, pillow breccia, amoeboid pillow breccia)
1 Basalt (massive, undifferentiated)
Geological contact (observed,approximate)
Schistosity (dip unknown)
Outcrop

Figure 19-2: Detailed geology at Webb-Garbutt occurrence (Century mine).

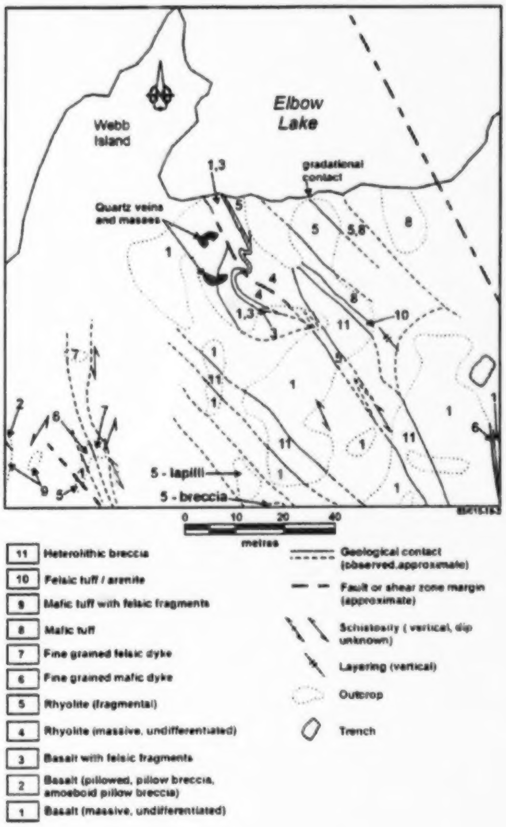
Elbow Lake
Webb Island
gradational contact
Quartz veins and masses
5 - lapilli
5 - breccia
0 10 20 40
metres
11 Heterolithic breccia
10 Felsic tuff / arenite
9 Mafic tuff with felsic fragments
8 Mafic tuff
7 Fine grained felsic dyke
6 Fine grained mafic dyke
5 Rhyolite (fragmental)
4 Rhyolite (massive, undifferentiated)
3 Basalt with felsic fragments
2 Basalt (pillowed, pillow breccia, amoeboid pillow breccia)
1 Basalt (massive, undifferentiated)
Geological contact (observed, approximate)
Fault or shear zone margin (approximate)
Schistosity (vertical, dip unknown)
Layering (vertical)
Outcrop
Trench

Figure 19-3: Detailed geology at Webb-Garbutt occurrence (Century mine).

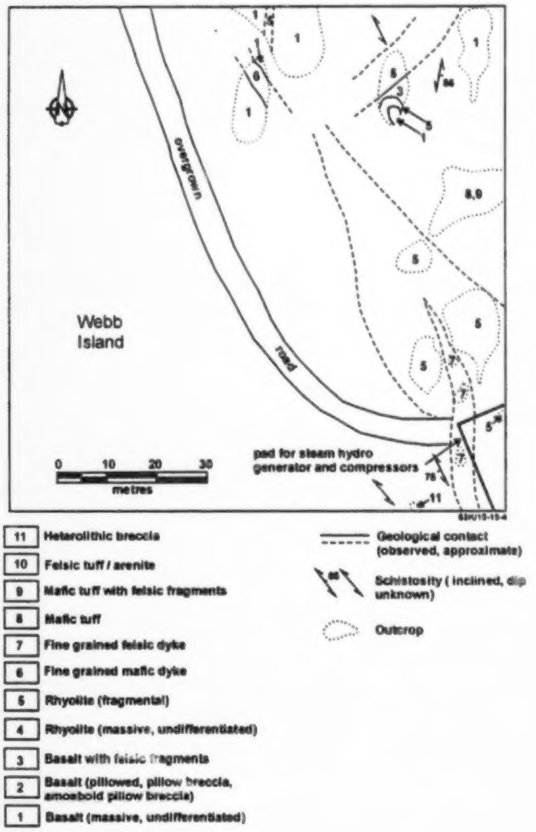
Webb Island
overgrown road
pad for steam hydro generator and compressors
0 10 20 30
metres
11 Heterolithic breccia
10 Felsic tuff / arenite
9 Mafic tuff with felsic fragments
8 Mafic tuff
7 Fine grained felsic dyke
6 Fine grained mafic dyke
5 Rhyolite (fragmental)
4 Rhyolite (massive, undifferentiated)
3 Basalt with felsic fragments
2 Basalt (pillowed, pillow breccia, amoeboid pillow breccia)
1 Basalt (massive, undifferentiated)
Geological contact (observed, approximate)
Schistosity (inclined, dip unknown)
Outcrop

Figure 19-4: Detailed geology at Webb-Garbutt occurrence (Century mine).

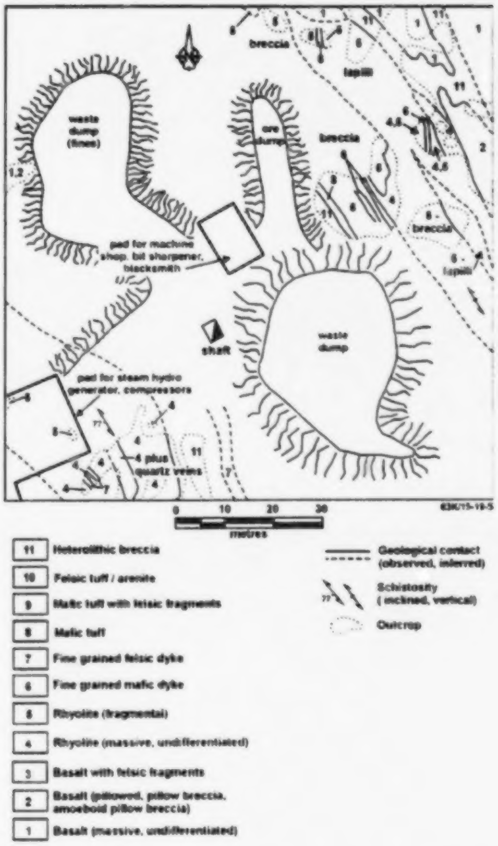
breccia
lapilli
waste dump (fines)
ore dump
breccia
6 - breccia
6 - lapilli
pad for machine shop, bit sharpener, blacksmith
shaft
waste dump
pad for steam hydro generator, compressors
4 plus quartz veins
0 10 20 30
metres
83K/15-19-5
11 Heterolithic breccia
10 Felsic tuff / arenite
9 Mafic tuff with felsic fragments
8 Mafic tuff
7 Fine grained felsic dyke
6 Fine grained mafic dyke
5 Rhyolite (fragmental)
4 Rhyolite (massive, undifferentiated)
3 Basalt with felsic fragments
2 Basalt (pillowed, pillow breccia, amoeboid pillow breccia)
1 Basalt (massive, undifferentiated)
Geological contact (observed, inferred)
Schistosity (inclined, vertical)
Outcrop

Figure 19-5: Detailed geology at Webb-Garbutt occurrence (Century mine).

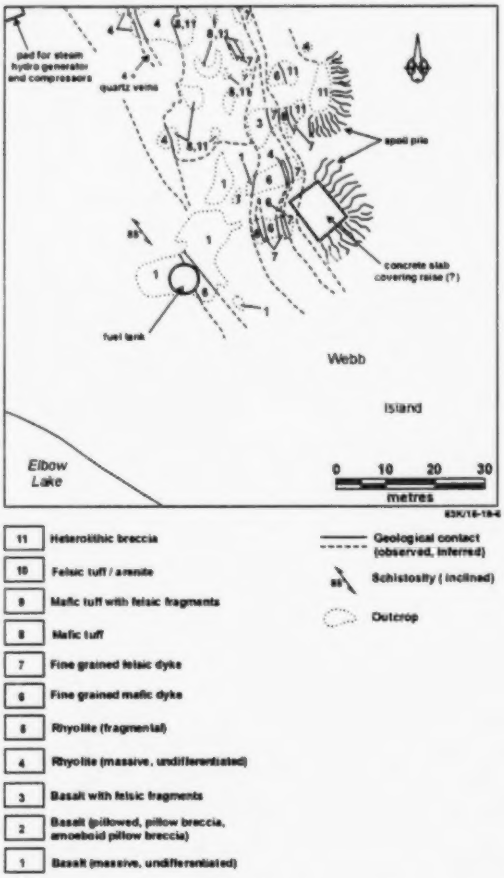
pad for steam hydro generator and compressors
4 + quartz veins
spoil pile
concrete slab covering raise (?)
fuel tank
Webb
Island
Elbow Lake
0 10 20 30
metres
83K/15-19-6
11 Heterolithic breccia
10 Felsic tuff / arenite
9 Mafic tuff with felsic fragments
8 Mafic tuff
7 Fine grained felsic dyke
6 Fine grained mafic dyke
5 Rhyolite (fragmental)
4 Rhyolite (massive, undifferentiated)
3 Basalt with felsic fragments
2 Basalt (pillowed, pillow breccia, amoeboid pillow breccia)
1 Basalt (massive, undifferentiated)
Geological contact (observed, inferred)
Schistosity (inclined)
Outcrop

Figure 19-6: Detailed geology at Webb-Garbutt occurrence (Century mine).

LOCATION: 20

NAME: Bow
UTM: 379410E, 6081915N
AREA: near north shore of Webb Island, Elbow Lake
ACCESS: via bush plane or by boat through the Cranberry Lakes from Cranberry Portage
AIRPHOTO: MB90025-117

EXPLORATION SUMMARY

The occurrence was staked in 1919 by Messrs. Thomas R. Webb and William Garbutt. Four trenches were excavated into the vein over a distance of approximately 76 m (250 feet) (Stockwell, 1935). McGlynn (1959) indicates the occurrence has also been explored by diamond drilling.

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 20-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by aphyric amoeboid pillow breccia and pillowed flows of the Webb Island basalt (unit J1a) (Syme and Whalen, 1992).

The host rocks of the occurrence consist of schistose massive, pillowed and flow brecciated basalt. Flow textures indicate that tops are to the west. The schistosity trends 010° and dips vertically. A few thin diorite dykes cut the volcanic rocks.

MINERALIZATION

The quartz vein that hosts the mineralization trends north-northeasterly but follows an irregular course (Fig. 20-2). It varies from about 10 cm to 1 m in thickness, and averages 60 cm along most of its exposed length. The vein consists dominantly of white quartz with brown-weathering Fe-carbonate and minor red feldspar. The quartz contains up to 1% disseminated pyrite. Lesser galena and chalcopyrite are also present. Stockwell (1935) noted the presence of sphalerite and pyrrhotite, and indicated that native gold was intimately associated with pyrite.

GEOCHEMICAL DATA

Stockwell (1935) indicates that the owner had obtained the following assays across 1.5 m (5 feet) of quartz at 4 localities along the vein:

20.55 g Au/t (0.60 oz. Au/ton)
41.10 g Au/t (1.20 oz. Au/ton)
9.59 g Au/t (0.28 oz. Au/ton)
11.64 g Au/t (0.34 oz. Au/ton)

A value of 5.48 g Au/t (0.16 oz. Au/ton) was obtained from a grab sample of wallrock.

CLASSIFICATION

Vein type deposit; single vein.

REFERENCES

McGlynn, J.C.

1959: Elbow-Heming Lakes Area, Manitoba; Geological Survey of Canada, Memoir 305, 72 pp.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Stockwell, C.H.

1935: Gold Deposits of the Elbow-Morton Area, Northern Manitoba; Geological Survey of Canada, Memoir 186, 74pp.

Syme, E.C. and Whalen, J.B.

1992: Geology, Elbow Lake, Manitoba; Geological Survey of Canada, Preliminary 1:20 000 map, Shield-Margin Project, File ELBOW92.PS.

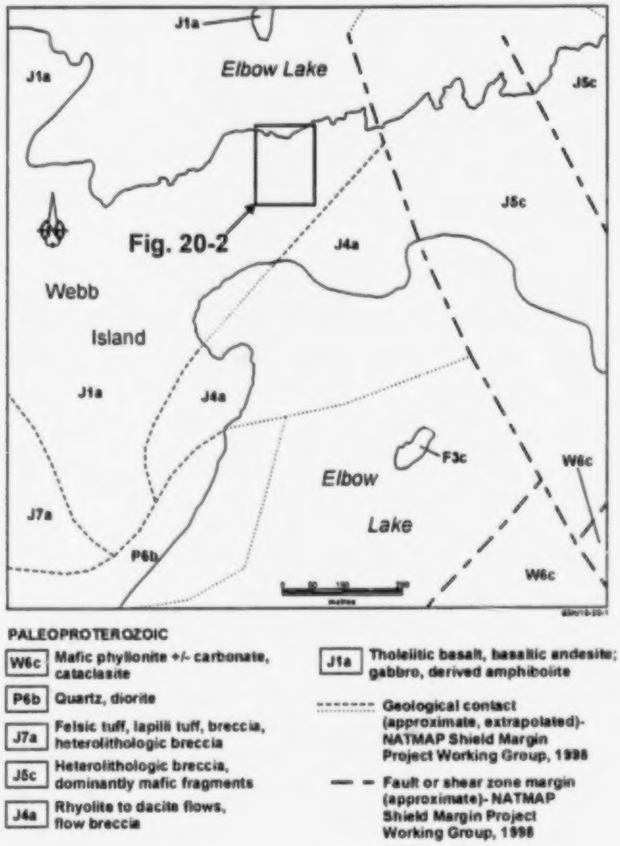
J1a
J1a
Elbow Lake
J5c
J5c
Fig. 20-2
J4a
Webb
Island
J1a
J4a
F3c
Elbow
Lake
W6c
J7a
P6b
W6c
0 50 100 200
metres
PALEOPROTEROZOIC
W6c Mafic phyllonite +/- carbonate, cataclasite
P6b Quartz, diorite
J7a Felsic tuff, lapilli tuff, breccia, heterolithologic breccia
J5c Heterolithologic breccia, dominantly mafic fragments
J4a Rhyolite to dacite flows, flow breccia
J1a Tholeiitic basalt, basaltic andesite; gabbro, derived amphibolite
Geological contact (approximate, extrapolated)- NATMAP Shield Margin Project Working Group, 1998
Fault or shear zone margin (approximate)- NATMAP Shield Margin Project Working Group, 1998

Figure 20-1: Geological setting of Bow occurrence.

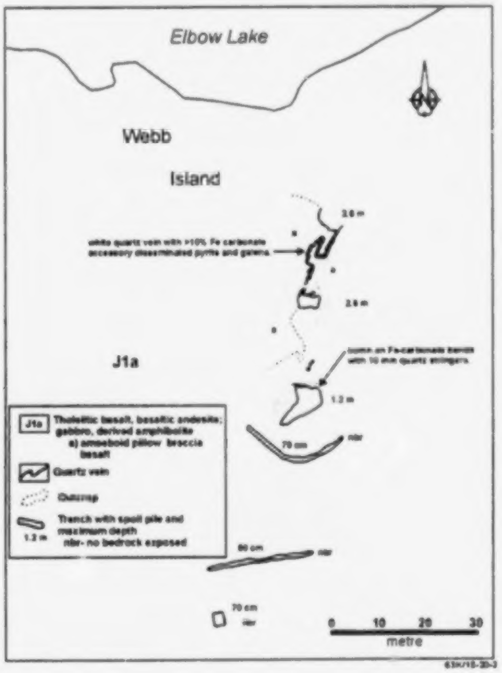
Elbow Lake
Webb
Island
2.0 m
white quartz vein with >10% Fe carbonate accessory disseminated pyrite and galena
a
a
2.6 m
a
[illegible] on Fe-carbonate bands with 10 mm quartz stringers
J1a
1.2 m
70 cm
nbr
J1a Tholeiitic basalt, basaltic andesite; gabbro, derived amphibolite
a) amoeboid pillow breccia basalt
Quartz vein
Outcrop
Trench with spoil pile and maximum depth
1.2 m
nbr- no bedrock exposed
80 cm
nbr
70 cm
nbr
0 10 20 30
metre
63K/16-20-2

Figure 20-2: Geology and trench locations of Bow occurrence.

LOCATION: 21

NAME: Silvertone Group

UTM:	
Site 1.	381830E, 6085045N
Site 2.	38[illegible]45E, 6085510N
Site 3a.	382455E, 6086110N
Site 3b.	382435E, 6086055N
Site 4.	382315E, 6085790N

AREA: approximately 1.6 km NNE of the north end of Moen Bay, Elbow Lake.

ACCESS: via bush plane or by boat through the Cranberry Lakes from Cranberry Portage, then traverse

AIRPHOTO: MB90025-58

EXPLORATION SUMMARY

The occurrence was staked in 1933 by Mr Harry N. Hawes. A 38 m (125 ft.) long trench with a 6.4 m (21 ft.) deep shaft were excavated in a 10.7 m (35 feet) thick zone of massive fine-grained pyrrhotite (Stockwell, 1935). In 1971 a horizontal loop EM survey was carried out over the property by Noranda Exploration Company Ltd. (Cancelled Assessment File 90643). Manitoba Mineral Resources drilled 6 holes totalling 603 m (1979 feet) to test four of the EM conductors (Cancelled Assessment File 90643, 92654). In 1973 Sherritt Gordon Mines carried out airborne EM and magnetic surveys under Airborne Permit No. 114 (A.F. 92020).

The trench with the shaft were not located during the 1992 field examination of the area. The locations of other excavations possibly related to the Silvertone occurrence are shown on Fig. 21-1.

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 21-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by aphyric pillowed flows and plagioclase-phyric heterolithic breccia of the Moen Bay basalt (unit F1c) and fine- to medium-grained equigranular gabbro (unit P2a) (Syme and Whalen, 1992). Schists (unit W6c) related to the Elbow Lake shear zone (Galley *et al.*, 1987, 1989; Syme, 1990, 1991, 1992) underlie the area west of the occurrence.

At Site 1 (Fig. 21-1), a trench has been excavated into mafic schist foliated at 010° and dips 85°E. The western end of the trench exposes a 20 cm thick aphyric rhyolite mass. Parts of the schist are limonitic but no sulphides were observed. No quartz veins or stringers were noted either in situ or in the waste pile.

A trench at Site 2 (Fig. 21-1) exposes a fine-grained, light grey rhyolitic rock. It is massive and unfoliated, and is transected by an irregular network of white quartz stringers and veinlets that make up to 40% of the unit. Pyrite, as masses to 5 cm, makes up approximately 5% of the quartz veinlets. The western 30 cm of the trench exposes mafic schist trending 020° and dipping 76°E. The contact with the felsic unit is sharp, planar and parallels the foliation of the schist.

Two trenches have been excavated at Site 3 (Fig. 21-1). The first (Site 3a) is 3.5 m deep, and exposes schistose mafic rock whose foliation trends 035° and dips vertically. The schistose interval is magnetic and limonitic, but no sulphides were observed. The north and south walls of the pit consist of massive mafic rock, probably basalt, and are unfoliated. The limonitic schistose unit trends approximately 135° as indicated by ferruginous overburden. The second trench (Site 3b) has been excavated into the SE extension of this limonitic zone, and exposes slightly to moderately schistose, limonitic mafic rock. Quartz stringers and veins to 10 cm thick occur along the north side of the trench at its western end. Pieces of quartz are also present in decrepitated excavated material. The rocks are magnetic due to their high pyrrhotite content.

Four trenches were excavated at the base of an 8 m cliff face at Site 4. All the excavated material has decrepitated and is limonitic, although the mafic rock exposed in the cliff face is massive and unfoliated. The rock in the trenches is only poorly exposed and is weathered and schistose. The rocks become less limonitic in the trenches to the south, but remain schistose and sericitic. The limonite has been derived from disseminated pyrrhotite, little of which is evident in hand specimen. Much of the rock is magnetic.

MINERALIZATION

Mineralized rock exposed in the trenches at the various sites is generally limonitic, schistose and decrepitated. Only minor sulphide was observed. It appears that pyrrhotite is the dominant phase, and occurs as disseminations within the schist. Much of the rock is magnetic although no magnetite was observed. Disseminated sulphides appear to make up to 10% of the rock, although Stockwell (1935) indicated that, "The western 35 feet of the exposed part of the deposit is of fine-grained, massive pyrrhotite."

GEOCHEMICAL DATA

No assays have been reported for this occurrence.

CLASSIFICATION

Disseminated mineralization - not classified. All the trenched sites expose sulphide-bearing schist associated with the Elbow Lake shear zone. The trench that contains "...35 feet...of fine-grained, massive pyrrhotite" was not located despite considerable effort.

REFERENCES

A.F. 90516, 90517, 90643, 92020, 93052; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

Galley, A.G., Ames, D.E. and Franklin, J.M.

1987: Geological setting of gold mineralization in the Elbow Lake region, Manitoba; in Manitoba Energy and Mines, Minerals Division, Report of Field Activities, 1987, pp.175-177.

1989: Results of studies on the gold metallogeny of the Flin Flon belt; in Investigations by the Geological Survey of Canada in Manitoba and Saskatchewan during the 1984-1989 Mineral Development Agreements, Geological Survey of Canada, Open File 2133, pp.25-32.

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1992: Elbow Lake Project - Part A: Supracrustal rocks; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1992, pp.32-46.

Syme, E.C. and Whalen, J.B.

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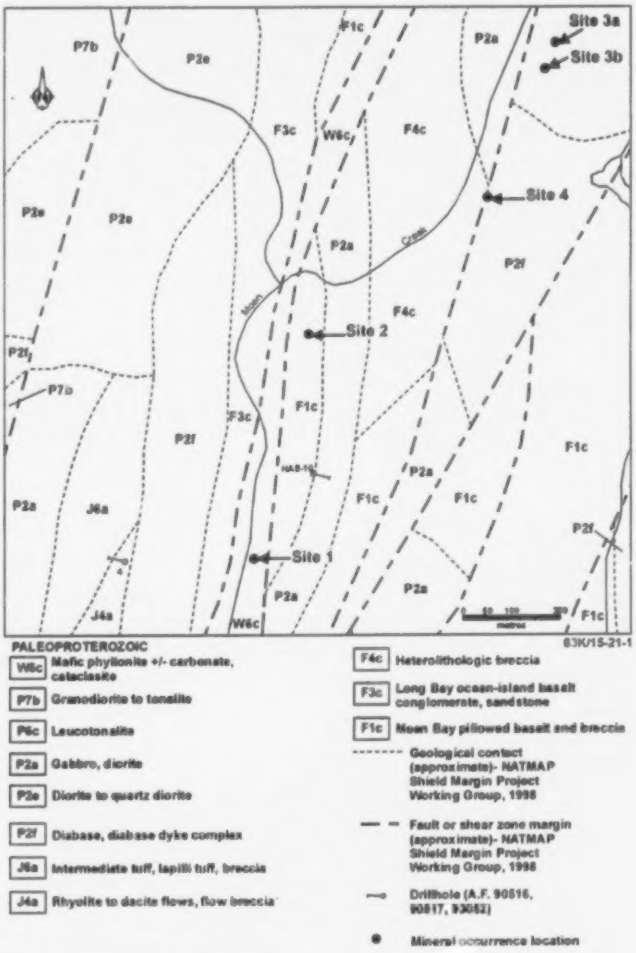
Site 3a
Site 3b
Site 4
Site 2
Site 1
P7b
P2e
F1c
P2a
F3c
W6c
F4c
P2f
Moen
Creek
J6a
J4a
metres
63K/15-21-1
PALEOPROTEROZOIC
W6c Mafic phyllonite +/- carbonate, cataclasite
P7b Granodiorite to tonalite
P6c Leucotonalite
P2a Gabbro, diorite
P2e Diorite to quartz diorite
P2f Diabase, diabase dyke complex
J6a Intermediate tuff, lapilli tuff, breccia
J4a Rhyolite to dacite flows, flow breccia
F4c Heterolithologic breccia
F3c Long Bay ocean-island basalt conglomerate, sandstone
F1c Moen Bay pillowed basalt and breccia
Geological contact (approximate)- NATMAP Shield Margin Project Working Group, 1998
Fault or shear zone margin (approximate)- NATMAP Shield Margin Project Working Group, 1998
Drillhole (A.F. 90516, 90517, 93052)
Mineral occurrence location

Figure 21-1: Geological setting of Silvertone occurrence.

LOCATION: 22

NAME: Long
UTM: 380490E, 6085635N
AREA: approximately 1.8 km east of Tee Lake and 1.5 km NW of head of Moen Bay, Elbow Lake
ACCESS: via bush plane or by boat through the Cranberry Lakes from Cranberry Portage, then traverse
AIRPHOTO: MB90025-115

EXPLORATION SUMMARY

Stockwell (1935) indicates the occurrence was staked in 1929 and re-staked in 1934. Three trenches were excavated during that period.

During the 1992 field examination of the occurrence, 11 trenches were located. All of the excavations appear to be fairly recent, but no history of work was found in the cancelled assessment files. The quartz vein has been exposed along strike for approximately 50 m.

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 22-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The occurrence is underlain by plagioclase and plagioclase-pyroxene-phyric pillowed flows of the NW-trending Tee Lake basalt (unit J1a) (Syme, 1991; Syme and Whalen, 1992). This basalt is approximately 900 m thick and is conformably (?) overlain to the SW by the Tee Lake rhyolite.

At the occurrence (Fig. 22-2) the rocks consist of fine-grained pillowed basalt with lesser interlayered flow breccia. The metavolcanic rocks trend approximately 115° and contain up to 1% disseminated pyrrhotite. Minor magnetite is also present. An irregular, fine-grained, medium green, rhyolitic unit containing minor quartz phenocrysts is interlayered with the basalt. The sequence is strongly foliated adjacent to the quartz vein that was the evaluation target for this occurrence. The schistosity is variable, but trends 190° with a moderate to steep westerly dip.

MINERALIZATION

A quartz vein up to 80 cm thick is exposed in most of the trenches at the occurrence. The vein trends parallel to the schistosity in the enclosing rocks. Minor pyrite is disseminated throughout the quartz. In the southern part of the occurrence pyrite occurs as masses within the quartz and comprises up to 5% of the vein. Up to 1% chalcopyrite is associated with the pyrite in this area. Euhedral black tourmaline (schorl?) grains to 0.5 mm are also present in the southern part of the occurrence.

GEOCHEMICAL DATA

Stockwell (1935) indicates that selected grab samples assayed up to 44.5 g Au/t (1.3 oz. Au/ton) in the western part of the occurrence, and up to 24 g Au/t (0.69 oz. Au/ton) from material obtained from the eastern trench at the occurrence. Assays obtained from channel samples returned the following results:

21.23 g Au/t (0.62 oz. Au/ton) across 0.9 m (3 ft.)

7.88 g Au/t (0.23 oz. Au/ton) across 1.2 m (4 ft.)

CLASSIFICATION

Vein type deposit; single vein. Hosted by schistose interval crosscutting mafic metavolcanic rocks.

REFERENCES

A.F. 90643, 92654; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Stockwell, C.H.

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Syme, E.C.

1991: Elbow Lake project - Part A: supracrustal rocks and structural setting; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1991, pp.14-27.

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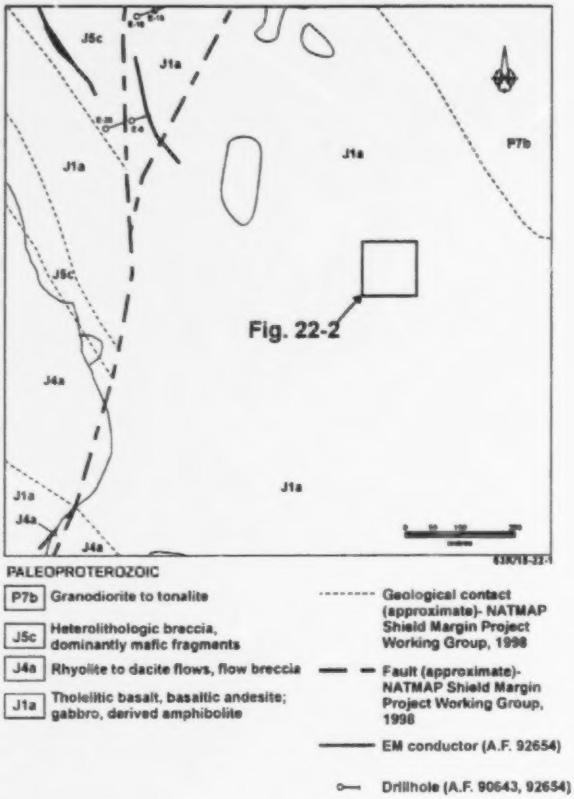
J5c
J1a
E-20
E-4
J1a
J1a
P7b
J5c
Fig. 22-2
J4a
J1a
J1a
J4a
J4a
0 50 100 200
metres
63K/16-22-1
PALEOPROTEROZOIC
P7b Granodiorite to tonalite
J5c Heterolithologic breccia, dominantly mafic fragments
J4a Rhyolite to dacite flows, flow breccia
J1a Tholeiitic basalt, basaltic andesite; gabbro, derived amphibolite
Geological contact (approximate)- NATMAP Shield Margin Project Working Group, 1998
Fault (approximate)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 92654)
Drillhole (A.F. 90643, 92654)

Figure 22-1: Geological setting of Long occurrence.

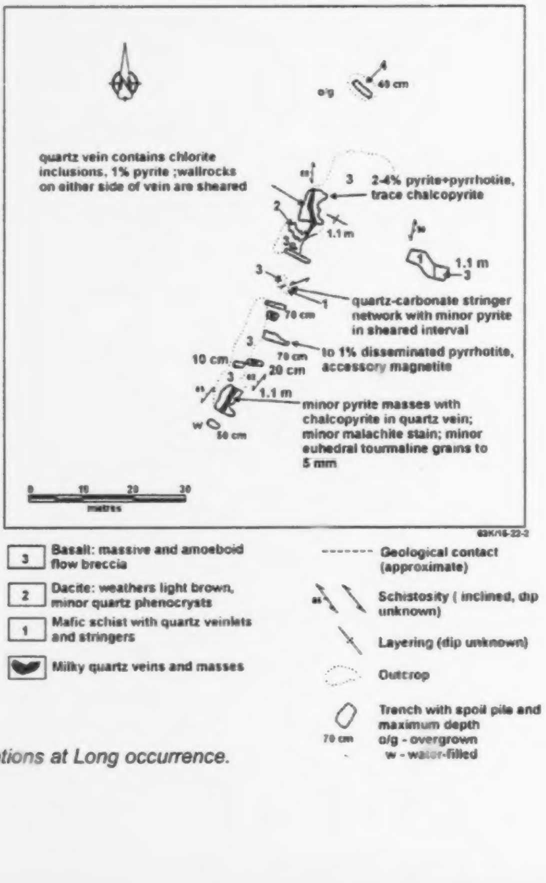
o/g
40 cm
quartz vein contains chlorite inclusions, 1% pyrite ;wallrocks on either side of vein are sheared
3
2-4% pyrite+pyrrhotite, trace chalcopyrite
2
1.1 m
3
1
1.1 m
3
3
1
quartz-carbonate stringer network with minor pyrite in sheared interval
70 cm
3
70 cm
to 1% disseminated pyrrhotite, accessory magnetite
10 cm
20 cm
3
1.1 m
minor pyrite masses with chalcopyrite in quartz vein; minor malachite stain; minor euhedral tourmaline grains to 5 mm
w
50 cm
0 10 20 30
metres
63K/16-22-2
3 Basalt: massive and amoeboid flow breccia
2 Dacite: weathers light brown, minor quartz phenocrysts
1 Mafic schist with quartz veinlets and stringers
Milky quartz veins and masses
Geological contact (approximate)
Schistosity (inclined, dip unknown)
Layering (dip unknown)
Outcrop
Trench with spoil pile and maximum depth
70 cm
o/g - overgrown
w - water-filled

Figure 22-2: Geology and trench locations at Long occurrence.

LOCATION: 23

NAME: Veda No. 2
UTM: 380220E, 6085155N
AREA: approximately 1.7 km east of Tee Lake and 1.4 km NW of head of Moen Bay, Elbow Lake
ACCESS: via bush plane or by boat through the Cranberry Lakes from Cranberry Portage, then traverse
AIRPHOTO: MB90025-115

EXPLORATION SUMMARY

Stockwell (1935) indicates that several trenches were excavated in the occurrence area.

During the 1992 field examination of the occurrence, 3 trenches were located. No indication of work post-dating Stockwell's visit to the location was found in the cancelled assessment files.

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 23-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by plagioclase and plagioclase-pyroxene-phyric pillowed flows of the NW-trending Tee Lake basalt (unit J1a) (Syme, 1991; Syme and Whalen, 1992). This unit is approximately 900 m thick and is conformably (?) overlain to the SW by the Tee Lake rhyolite (unit J4a).

The main rock at the occurrence consists of fine-grained, massive and flow brecciated basalt. A light grey, fine-grained quartz porphyry dyke containing uncommon quartz phenocrysts is exposed in one of the trenches. The metavolcanic and intrusive rocks contain thin schistose intervals that host the mineralization.

MINERALIZATION

Trench 1 exposes a quartz vein up to 7 cm thick trending 350°/64° in massive and flow brecciated basalt. Both the quartz vein and basalt contain minor disseminated pyrite. Several thin quartz veins with an irregular distribution were noted in exposures near the trench.

Trench 2 was excavated into a fine-grained, grey, siliceous, schistose quartz porphyry dyke. No sulphides were found in the trench or on the waste piles, but the rocks are extensively stained with Fe oxides. Minor disseminated pyrite and pyrrhotite are present in the dyke and enclosing mafic metavolcanic rock.

Trench 3 appears to be a relatively recent excavation into the side of a steep hill. The rock exposed in the trench is schistose and contains abundant pyrite that is banded parallel to the schistosity of the enclosing rock.

GEOCHEMICAL DATA

No assays have been reported for this occurrence, but Stockwell (1935) indicates that "Iron-stained, weathered bands in the schistose porphyry are said to pan plentiful free gold.".

CLASSIFICATION

Disseminated mineralization - not classified. Sulphides occur within schist, some of which is derived from quartz porphyry.

REFERENCES

A.F. 90643, 92654; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Stockwell, C.H.

1935: Gold Deposits of the Elbow-Morton Area, Northern Manitoba; Geological Survey of Canada, Memoir 186, 74pp.

Syme, E.C.

1991: Elbow Lake project - Part A: supracrustal rocks and structural setting; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1991, pp.14-27.

Syme, E.C. and Whalen, J.B.

1992: Geology, Elbow Lake, Manitoba; Geological Survey of Canada, Preliminary 1:20 000 map, Shield-Margin Project, File ELBOW92.PS.

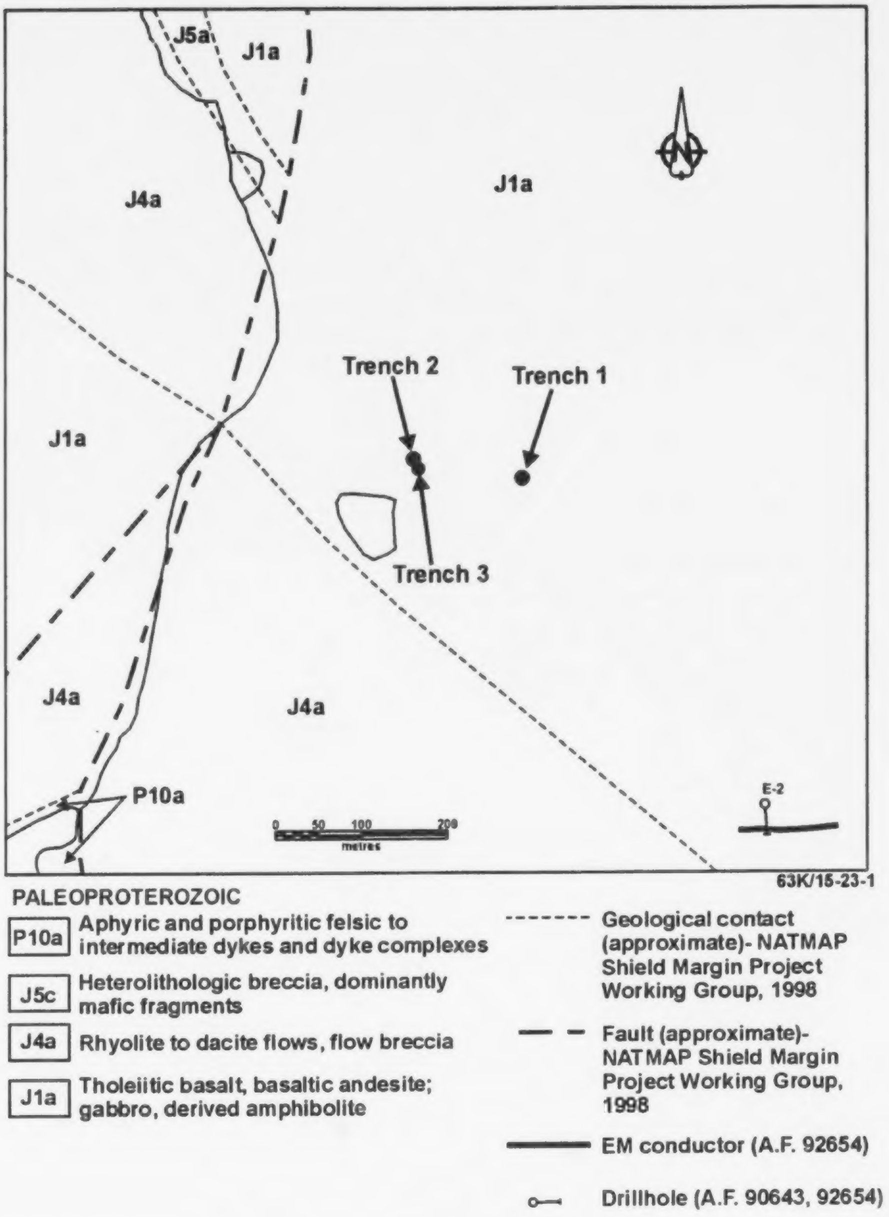
J5a
J1a
J4a
J1a
Trench 2
Trench 1
J1a
Trench 3
J4a
J4a
P10a
0 50 100 200
metres
E-2
63K/15-23-1
PALEOPROTEROZOIC
P10a Aphyric and porphyritic felsic to intermediate dykes and dyke complexes
J5c Heterolithologic breccia, dominantly mafic fragments
J4a Rhyolite to dacite flows, flow breccia
J1a Tholeiitic basalt, basaltic andesite; gabbro, derived amphibolite
Geological contact (approximate)- NATMAP Shield Margin Project Working Group, 1998
Fault (approximate)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 92654)
Drillhole (A.F. 90643, 92654)

Figure 23-1: Geological setting and trench locations of Veda No. 2 occurrence.

LOCATION: 24

NAME: Tee Lake No. 4
UTM: 379430E, 6085745N
AREA: approximately 0.6 km east of Tee Lake
ACCESS: via bush plane or by boat through the Cranberry Lakes from Cranberry Portage, then traverse
AIRPHOTO: MB90025-115

EXPLORATION SUMMARY

Stockwell (1935) indicates that several trenches were excavated in the occurrence area.

During the 1992 field examination of the occurrence, an extensively stripped area was located. No history of work in the area was found in the cancelled assessment files.

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 24-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The occurrence area is underlain by massive aphyric to quartz-phyric Tee Lake rhyolite (unit J4a) (Syme, 1991; Syme and Whalen, 1992). This unit is approximately 600 m thick north of Webb Island. The rhyolite is conformably (?) underlain to the NE by the Tee Lake basalt. It comprises the largest felsic complex in the Elbow Lake area.

The rocks in the occurrence area consist dominantly of fine-grained rhyolite containing up to 2% quartz phenocrysts. The rhyolite is made up of fragments that are several metres long in a dark green chloritic matrix. It is unclear if the fragmental character of this unit is primary or the result of hydrothermal alteration.

MINERALIZATION

Little sulphide was found at the occurrence, but the rocks are extensively stained by brown Fe oxides. Silicified areas consisting of quartz lined vugs, open spaces and barren massive quartz veins are present. At the north end of the occurrence fine-grained magnetite is associated with quartz and dark green chlorite. The chloritic alteration extends to the east over most of the outcrop. To the south of the main stripped area the chlorite alteration disappears and is replaced by fine-grained sericite.

The only sulphides noted were <2% pyrrhotite, as disseminated grains and aggregates up to 5 mm, and minor disseminated pyrite.

GEOCHEMICAL DATA

Stockwell (1935) indicated that the "... fresh and rusty porphyries are said to pan coarse gold and to assay from 0.10 to 0.18 ounce of gold a ton."

CLASSIFICATION

Disseminated mineralization - not classified. Occurs in extensively altered rhyolitic sequence.

REFERENCES

A.F. 90504; Cancelled Assessment File, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Stockwell, C.H.

1935: Gold Deposits of the Elbow-Morton Area, Northern Manitoba; Geological Survey of Canada, Memoir 186, 74pp.

Syme, E.C.

1991: Elbow Lake project - Part A: supracrustal rocks and structural setting; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1991, pp.14-27.

Syme, E.C. and Whalen, J.B.

1992: Geology, Elbow Lake, Manitoba; Geological Survey of Canada, Preliminary 1:20 000 map, Shield-Margin Project, File ELBOW92.PS.

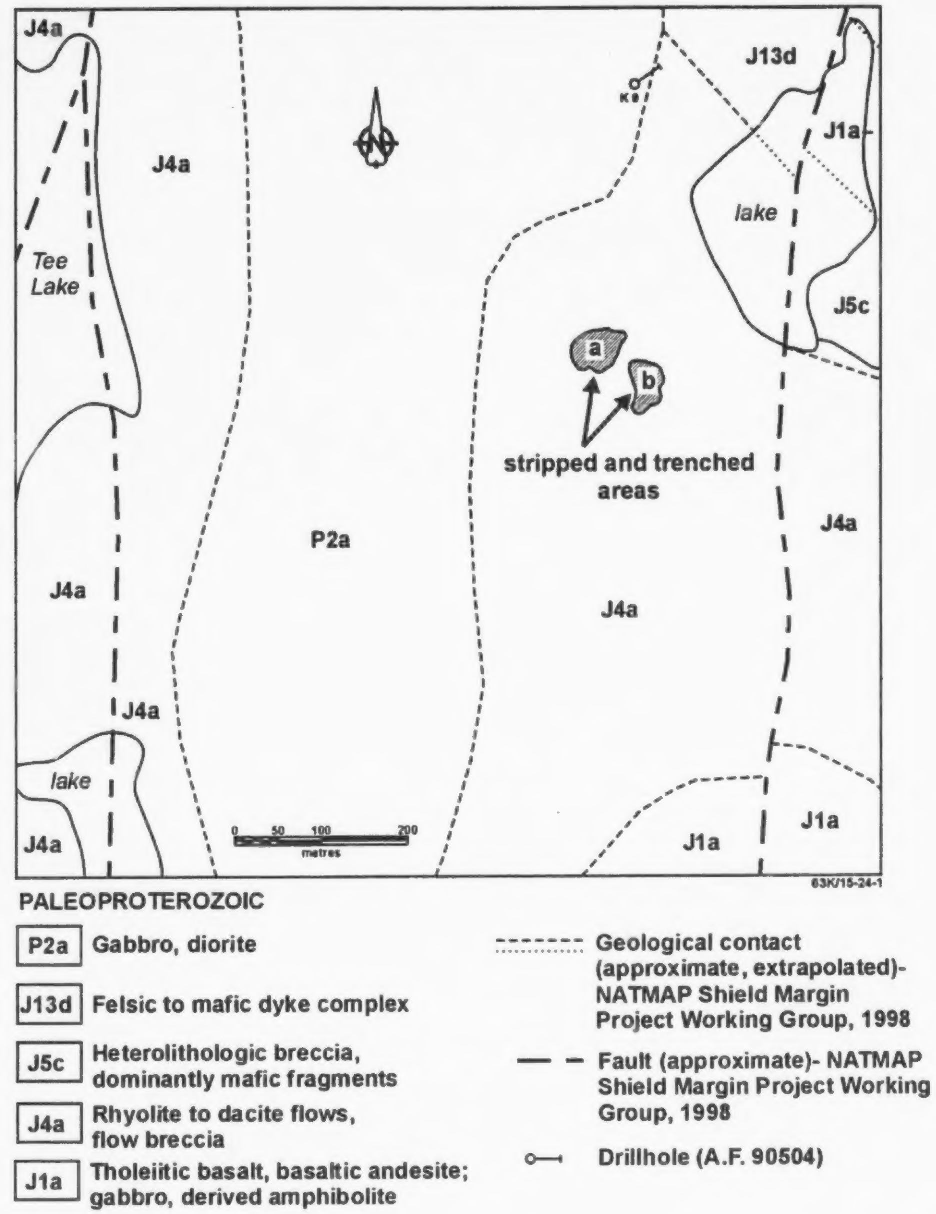
J4a
Tee Lake
J4a
J13d
J1a
lake
J5c
a
b
stripped and trenched areas
P2a
J4a
J4a
J4a
J4a
lake
J4a
0 50 100 200
metres
J1a
J1a
63K/15-24-1
PALEOPROTEROZOIC
P2a Gabbro, diorite
J13d Felsic to mafic dyke complex
J5c Heterolithologic breccia, dominantly mafic fragments
J4a Rhyolite to dacite flows, flow breccia
J1a Tholeiitic basalt, basaltic andesite; gabbro, derived amphibolite
Geological contact (approximate, extrapolated)- NATMAP Shield Margin Project Working Group, 1998
Fault (approximate)- NATMAP Shield Margin Project Working Group, 1998
Drillhole (A.F. 90504)

Figure 24-1: Geological setting of Tee Lake No. 4 occurrence.

LOCATION: 25

NAME: Fred
UTM: 378500E, 6079735N
AREA: on eastern shoreline of small island west of Big Poplar Island, Elbow Lake
ACCESS: via bush plane or by boat through the Cranberry Lakes from Cranberry Portage
AIRPHOTO: MB90025-120

EXPLORATION SUMMARY

Stockwell (1935) indicates that a single trench was excavated at the occurrence.

This overgrown trench was located during the 1992 field examination of the occurrence. No history of additional work at the occurrence was found in the cancelled assessment files.

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 25-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The occurrence is located approximately 450 m W of the western margin of the Elbow Lake shear zone (unit W6c) (Galley *et al.*, 1987, 1989; Syme, 1990, 1991, 1992), and the area is underlain by pillowed and massive aphyric flows of the McDougalls Point basalt (unit F1a) (Syme, 1991; Syme and Whalen, 1992).

Stockwell (1935) and Galley (field notes, 1987) indicate the occurrence is located at the contact of a red quartz-feldspar porphyry dyke, at least 15 m thick, and well foliated mafic metavolcanic rock. A thin chert-magnetite Fe-formation is exposed in the trench along the SW edge of the dyke. The sequence to the west of the occurrence on the main part of the island is dominated by mafic, moderately calcareous, volcaniclastic rocks.

MINERALIZATION

Disseminated pyrite occurs in both the schistose mafic metavolcanic rocks at the contact with the quartz-feldspar porphyry dyke and within the dyke itself. The dyke contains abundant irregular white quartz fracture fillings as well as a planar vein set trending 070^{o}. The Fe-formation contains minor pyrite, molybdenite and possibly sphalerite and greenalite. Minor arsenopyrite has been noted within quartz veins in the dyke (Galley, field notes, 1987).

GEOCHEMICAL DATA

No assays were reported for this occurrence.

CLASSIFICATION

Vein type deposit; single vein/lenses. Quartz vein associated with quartz-feldspar porphyry dyke and magnetite-chert Fe-formation.

REFERENCES

A.F. 90511, 91487, 92654; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

Galley, A.G., Ames, D.E. and Franklin, J.M.

1987: Geological setting of gold mineralization in the Elbow Lake region, Manitoba; in Manitoba Energy and Mines, Minerals Division, Report of Field Activities, 1987, pp.175-177.

1989: Results of studies on the gold metallogeny of the Flin Flon belt; in Investigations by the Geological Survey of Canada in Manitoba and Saskatchewan during the 1984-1989 Mineral Development Agreements, Geological Survey of Canada, Open File 2133, pp.25-32.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Stockwell, C.H.

1935: Gold Deposits of the Elbow-Morton Area, Northern Manitoba; Geological Survey of Canada, Memoir 186, 74pp.

Syme, E.C.

1990: Elbow Lake project (part of NTS 63K/15W); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1990, pp.49-57.

1991: Elbow Lake project - Part A: supracrustal rocks and structural setting; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1991, pp.14-27.

1992: Elbow Lake Project - Part A: Supracrustal rocks; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1992, pp.32-46.

Syme, E.C. and Whalen, J.B.

1992: Geology, Elbow Lake, Manitoba; Geological Survey of Canada, Preliminary 1:20 000 map, Shield-Margin Project, File ELBOW92.PS.

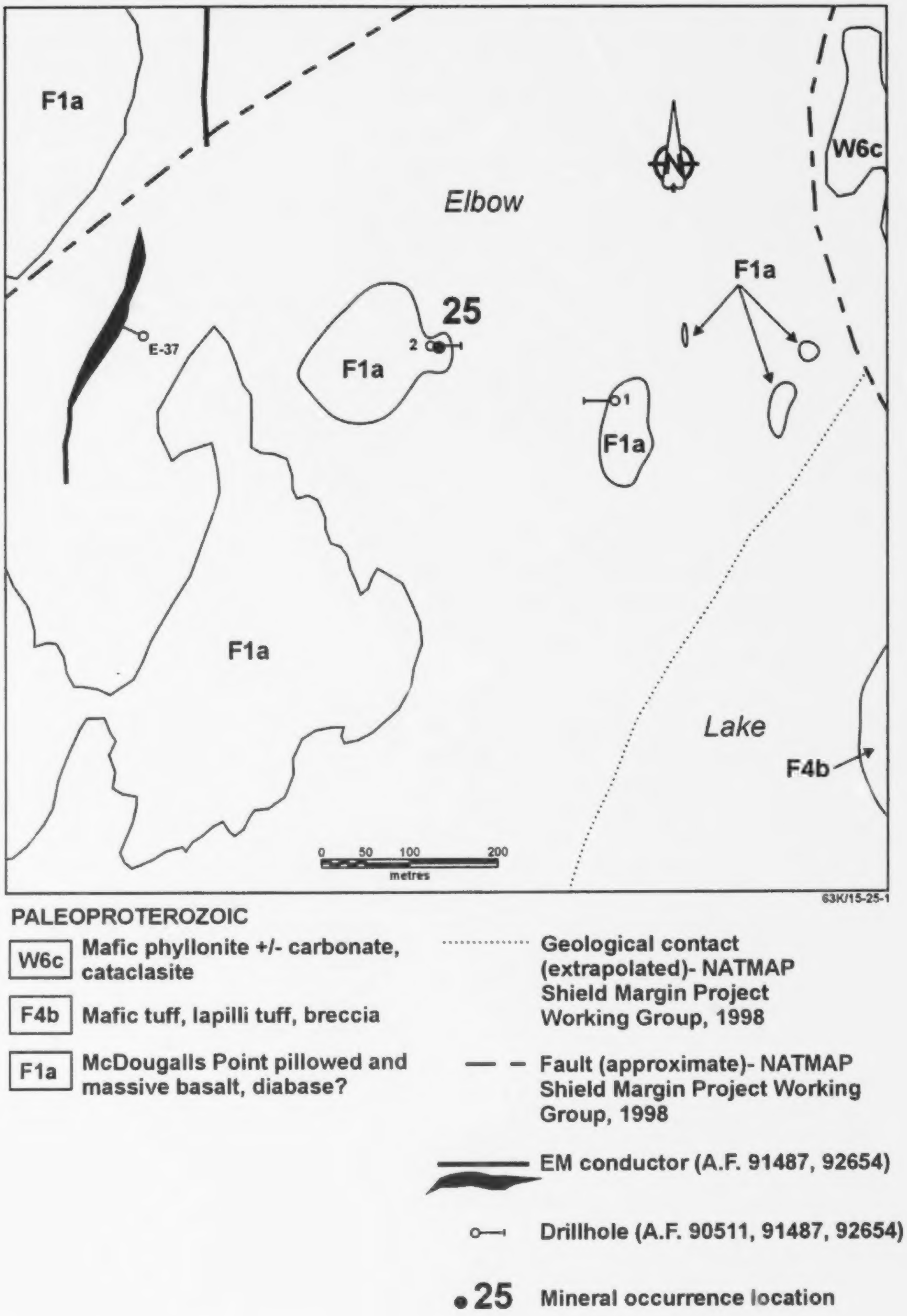
F1a
Elbow
W6c
F1a
25
2
E-37
F1a
1
F1a
F1a
Lake
F4b
0 50 100 200
metres
63K/15-25-1
PALEOPROTEROZOIC
W6c Mafic phyllonite +/- carbonate, cataclasite
F4b Mafic tuff, lapilli tuff, breccia
F1a McDougalls Point pillowed and massive basalt, diabase?
Geological contact (extrapolated)- NATMAP Shield Margin Project Working Group, 1998
Fault (approximate)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 91487, 92654)
Drillhole (A.F. 90511, 91487, 92654)
25 Mineral occurrence location

Figure 25-1: Geological setting of Fred occurrence.

LOCATION: 26

NAME: G.H.
UTM: 377830E, 6080355N
AREA: near west side of Elbow Lake, east of Long Bay
ACCESS: via bush plane or by boat through the Cranberry Lakes from Cranberry Portage, then traverse
AIRPHOTO: MB90025-139

EXPLORATION SUMMARY

Stockwell (1935) indicates that several trenches were excavated at the occurrence.

Five trenches, now mostly overgrown, were located during the 1992 field examination of the occurrence. No history of additional work at the occurrence was found in the cancelled assessment files.

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 26-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The occurrence is located approximately 1.1 km W of the western margin of the Elbow Lake shear zone (Galley *et al.*, 1987, 1989; Syme, 1990, 1991, 1992). The area is underlain by NE-trending, SE-topping pillowed and massive plagioclase-phyric flows of the McDougalls Point basalt (unit F1a). The basalt is at least 1100 m thick (Syme, 1991; Syme and Whalen, 1992). The mafic flows are intruded by synvolcanic diabase/gabbro intrusions and east-west striking felsic dykes (Galley, field notes, 1987). A series of NNW- striking shears crosscut the basalt in the area.

The two northernmost trenches of the three trenches at the southern part of the occurrence (Fig. 26-2) expose brown-weathering quartz porphyry, which extends at least 45 m east of the trenches. The southernmost trench appears to have been excavated into slightly schistose metavolcanic rock. The contact of the basalt with the quartz porphyry is not exposed.

MINERALIZATION

The quartz porphyry and schistose basalt are cut by discrete white quartz veins and veinlets to 30 cm thick that show little strike continuity. In the spoil pile beside the central trench (Fig. 26-2), quartz makes up 50% of the rock. The quartz contains patches of carbonate and minor disseminated pyrite. Minor disseminated pyrite and arsenopyrite are also present along fractures in the quartz porphyry.

GEOCHEMICAL DATA

Galley (field notes, 1987) obtained an average of 138 ppb Au and 43 ppm tungsten from two sulphide-rich rock samples at the occurrence.

CLASSIFICATION

Vein type deposit; multiple veins or lenses. Multiple stringer network hosted by basalt and quartz porphyry.

REFERENCES

A.F. 92654; Cancelled Assessment File, Manitoba Industry, Trade and Mines, Minerals Division.

Galley, A.G., Ames, D.E. and Franklin, J.M.

1987: Geological setting of gold mineralization in the Elbow Lake region, Manitoba; in Manitoba Energy and Mines, Minerals Division, Report of Field Activities, 1987, pp.175-177.

1989: Results of studies on the gold metallogeny of the Flin Flon belt; in Investigations by the Geological Survey of Canada in Manitoba and Saskatchewan during the 1984-1989 Mineral Development Agreements, Geological Survey of Canada, Open File 2133, pp.25-32.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Stockwell, C.H.

1935: Gold Deposits of the Elbow-Morton Area, Northern Manitoba; Geological Survey of Canada, Memoir 186, 74pp.

Syme, E.C.

1990: Elbow Lake project (part of NTS 63K/15W); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1990, pp.49-57.

1991: Elbow Lake project - Part A: supracrustal rocks and structural setting; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1991, pp.14-27.

1992: Elbow Lake Project - Part A: Supracrustal rocks; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1992, pp.32-46.

Syme, E.C. and Whalen, J.B.

1992: Geology, Elbow Lake, Manitoba; Geological Survey of Canada, Preliminary 1:20 000 map, Shield-Margin Project, File ELBOW92.PS.

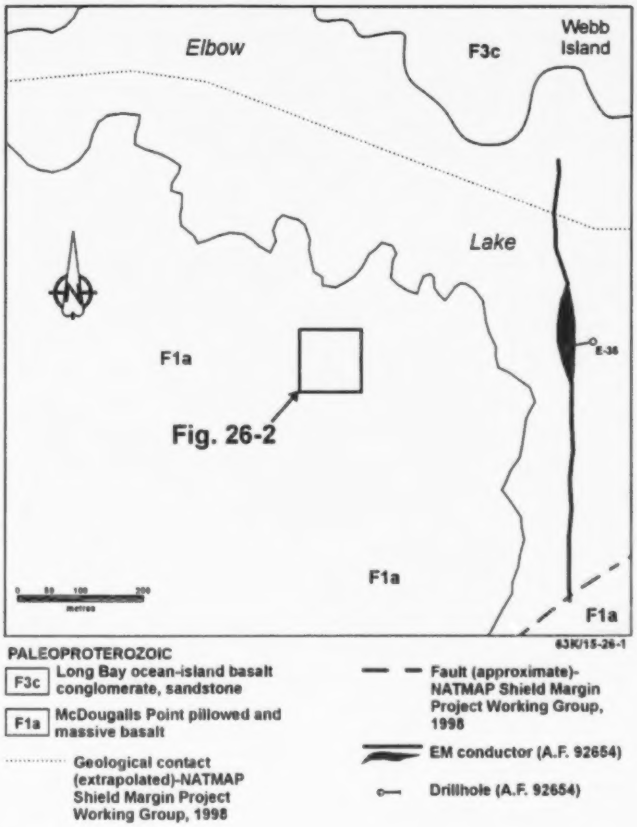
Elbow
F3c
Webb Island
Lake
F1a
Fig. 26-2
E-38
F1a
F1a
0 50 100 200
metres
63K/15-26-1
PALEOPROTEROZOIC
F3c Long Bay ocean-island basalt conglomerate, sandstone
F1a McDougalls Point pillowed and massive basalt
Geological contact (extrapolated)-NATMAP Shield Margin Project Working Group, 1998
Fault (approximate)-NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 92654)
Drillhole (A.F. 92654)

Figure 26-1: Geological setting of G.H. occurrence.

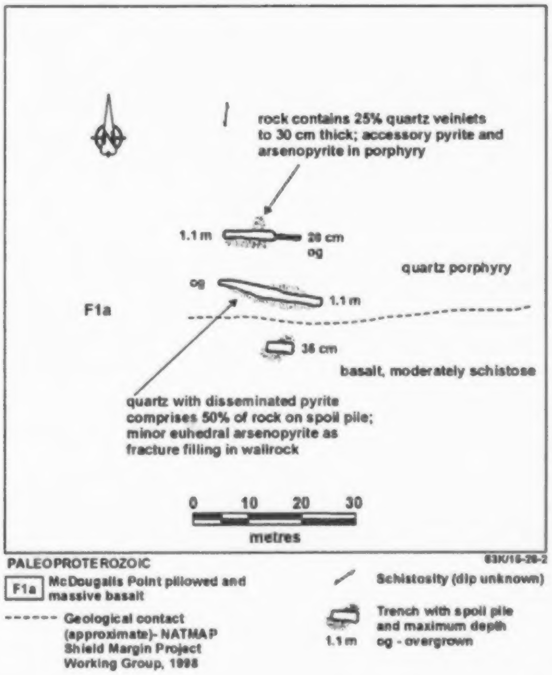
rock contains 25% quartz veinlets to 30 cm thick; accessory pyrite and arsenopyrite in porphyry
1.1 m
20 cm
og
quartz porphyry
og
1.1 m
F1a
35 cm
basalt, moderately schistose
quartz with disseminated pyrite comprises 50% of rock on spoil pile; minor euhedral arsenopyrite as fracture filling in wallrock
0 10 20 30
metres
63K/15-26-2
PALEOPROTEROZOIC
F1a McDougalls Point pillowed and massive basalt
Geological contact (approximate)- NATMAP Shield Margin Project Working Group, 1998
Schistosity (dip unknown)
Trench with spoil pile and maximum depth
1.1 m
og - overgrown

Figure 26-2: Geology and trench locations at G.H. occurrence.

LOCATION: 27

NAME: Jessie
UTM: 377260E, 6080685N
AREA: along west side of Elbow Lake at mouth of Long Bay
ACCESS: via bush plane or by boat through the Cranberry Lakes from Cranberry Portage
AIRPHOTO: MB90025-139

EXPLORATION SUMMARY

Stockwell (1935) indicates that two trenches were excavated along the shoreline at the occurrence.

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 27-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The occurrence is located approximately 2 km W of the western margin of the Elbow Lake shear zone (Galley *et al.*, 1987, 1989; Syme, 1990, 1991, 1992). The area is underlain by NE-trending, SE-topping pillowed and massive aphyric flows of the McDougalls Point basalt (unit F1a). A synvolcanic, fine to medium-grained, equigranular gabbro (unit P2a) occurs a short distance to the SE of the occurrence. Northwest-striking quartz-feldspar dykes crosscut the sequence (Galley, field notes, 1987).

A series of NNW and ESE striking shears crosscut the basalt in the area. These shears show patchy carbonatization and minor sulphide mineralization.

MINERALIZATION

Quartz veins occur in an east-west striking carbonate alteration zone. Carbonate stringers occur parallel to the foliation and form *en échelon* vein networks. Stockwell (1935) indicated the quartz occurs as stringers and veins across a width of approximately 3 m, and individual quartz veins are up to 15 cm thick. The quartz contains carbonate, feldspar, chlorite and small quantities of disseminated pyrite. Some disseminated pyrite is also present in the schist surrounding the vein.

GEOCHEMICAL DATA

No assays were reported for this occurrence.

CLASSIFICATION

Vein type deposit; multiple veins or lenses.

REFERENCES

A.F. 92654; Cancelled Assessment File, Manitoba Industry, Trade and Mines, Minerals Division.

Galley, A.G., Ames, D.E. and Franklin, J.M.

1987: Geological setting of gold mineralization in the Elbow Lake region, Manitoba; in Manitoba Energy and Mines, Minerals Division, Report of Field Activities, 1987, pp.175-177.

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NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Stockwell, C.H.

1935: Gold Deposits of the Elbow-Morton Area, Northern Manitoba; Geological Survey of Canada, Memoir 186, 74pp.

Syme, E.C.

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1991: Elbow Lake project - Part A: supracrustal rocks and structural setting; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1991, pp.14-27.

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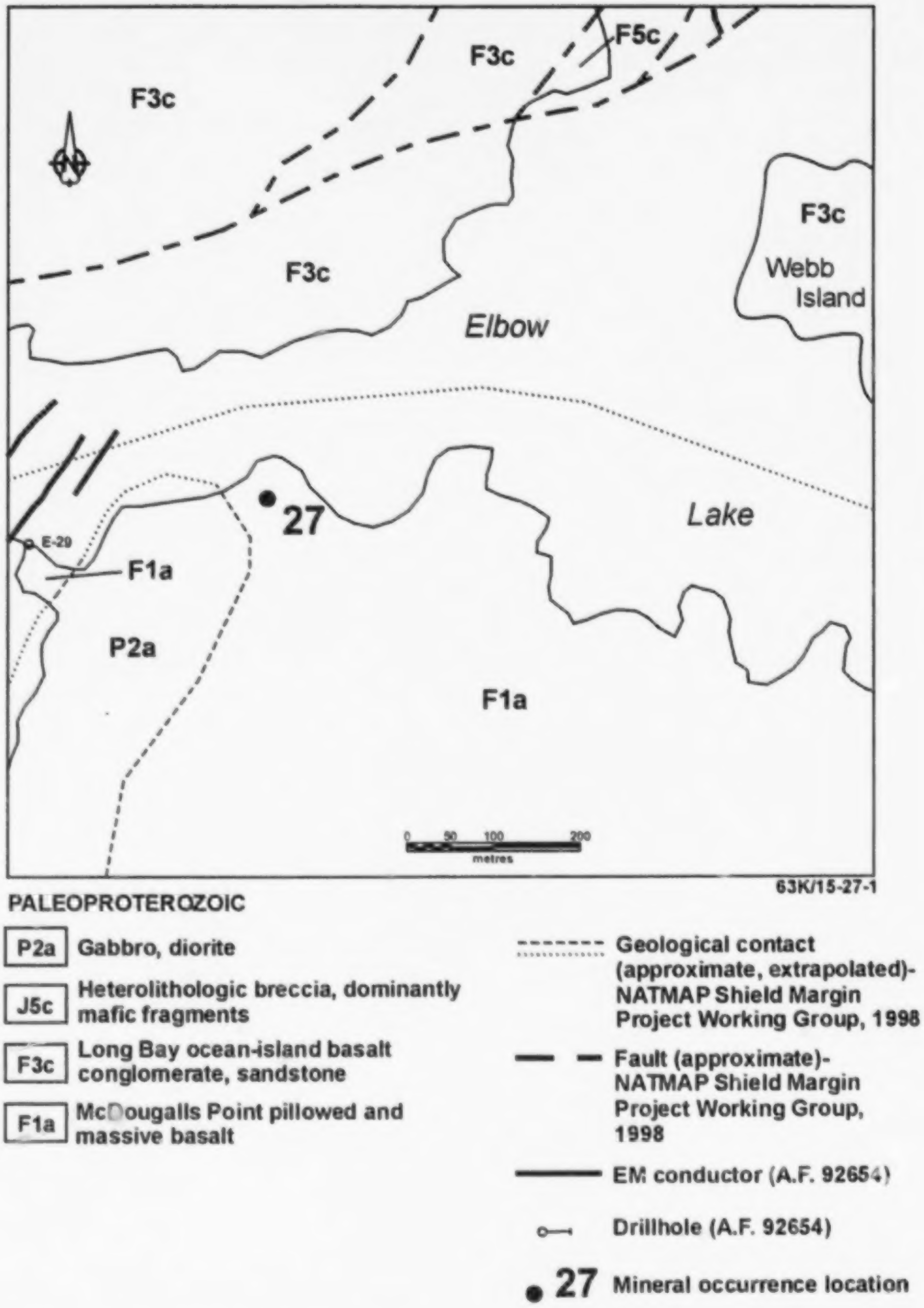
F3c
F3c
F5c
F3c
F3c
Webb Island
Elbow
Lake
27
E-29
F1a
P2a
F1a
0 50 100 200
metres
63K/15-27-1
PALEOPROTEROZOIC
P2a Gabbro, diorite
J5c Heterolithologic breccia, dominantly mafic fragments
F3c Long Bay ocean-island basalt conglomerate, sandstone
F1a McDougalls Point pillowed and massive basalt
Geological contact (approximate, extrapolated)-NATMAP Shield Margin Project Working Group, 1998
Fault (approximate)-NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 92654)
Drillhole (A.F. 92654)
27 Mineral occurrence location

Figure 27-1: Geological setting of Jessie occurrence.

LOCATION: 28

NAME: Rod
UTM: 375525E, 6079595N
AREA: approximately 0.4 km WSW of south end of Long Bay, Elbow Lake
ACCESS: via bush plane or by boat through the Cranberry Lakes from Cranberry Portage, then traverse
AIRPHOTO: MB90025-139

EXPLORATION SUMMARY

The claim was staked in 1933 and a trench excavated (Stockwell, 1935). Noranda Exploration Company, Ltd. undertook an HLEM (Ronka Mk. III) survey adjacent to the occurrence area in 1971 (A.F. 90500). In 1986 the occurrence area was mapped and sampled (A.F. 93250).

Two mostly overgrown trenches were located during the 1992 examination of the occurrence.

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 28-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). Syme (1991) and Syme and Whalen (1992) indicate that the area is underlain by massive, coarse-grained pyroxenite and melagabbro, coarse-grained gabbro to hornblende-biotite diorite (units P2a and P2d) of the Echo Lake pluton, gabbro and melagabbro (unit P1a) of the Long Bay gabbro complex , and the Long Bay basaltic conglomerate (unit F3c). The sequence has been intruded by felsic and feldspar porphyry dykes.

The occurrence is located near the contact of a well-foliated fragmental mafic unit and quartz diorite. It is unclear if the volcanic unit represents a large xenolith within the diorite.

MINERALIZATION

Two quartz veins 25 and 30 cm thick are exposed in the NE side of the southern trench. These veins trend 182/62°. Much quartz is present on the spoil pile. The quartz vein material contains orange feldspar and minor pyrite. A 25 cm thick quartz vein is exposed along the E side of the northern trench. It trends 165/71°, and has similar characteristics as those exposed in the southern trench.

GEOCHEMICAL DATA

Stockwell (1935) indicated that a sample across 1.2 m (4 ft.) of quartz carried 8.56 g Au/t (0.25 oz. Au/ton). An assay from a grab sample collected in 1986 from the occurrence area returned an assay of 0.68 g Au/t (0.02 oz. Au/ton) (A.F. 93250).

CLASSIFICATION

Vein type deposit; multiple veins or lenses. Hosted by schistose mafic metavolcanic rock near a quartz diorite intrusion.

REFERENCES

A.F. 90500, 91487, 92654, 93250; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Stockwell, C.H.

1935: Gold Deposits of the Elbow-Morton Area, Northern Manitoba; Geological Survey of Canada, Memoir 186, 74pp.

Syme, E.C.

1991: Elbow Lake project - Part A: supracrustal rocks and structural setting; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1991, pp.14-27.

Syme, E.C. and Whalen, J.B.

1992: Geology, Elbow Lake, Manitoba; Geological Survey of Canada, Preliminary 1:20 000 map, Shield-Margin Project, File ELBOW92.PS.

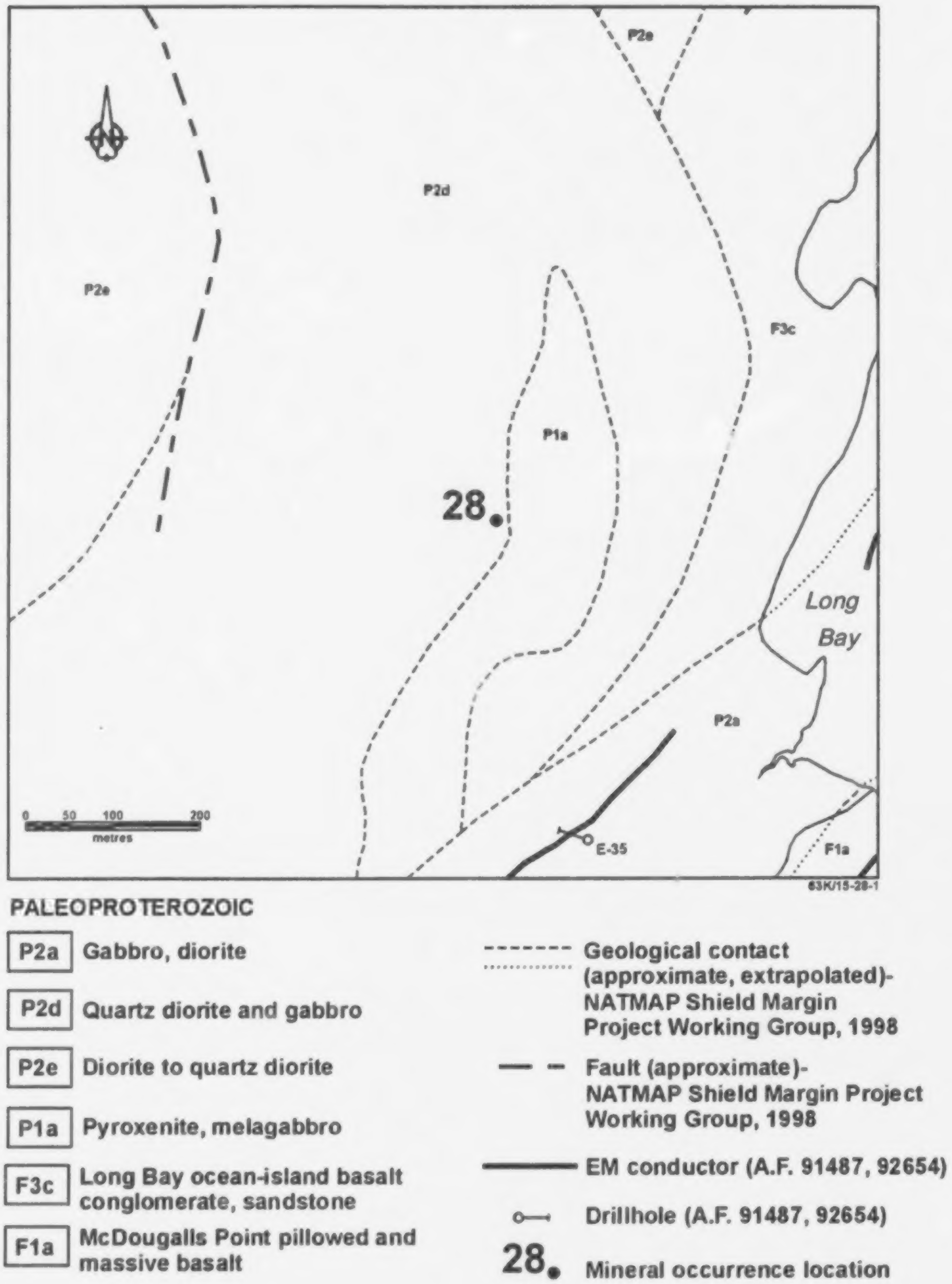
P2e
P2d
P2e
F3c
P1a
28.
Long Bay
P2a
E-35
F1a
0 50 100 200
metres
63K/15-28-1
PALEOPROTEROZOIC
P2a Gabbro, diorite
P2d Quartz diorite and gabbro
P2e Diorite to quartz diorite
P1a Pyroxenite, melagabbro
F3c Long Bay ocean-island basalt conglomerate, sandstone
F1a McDougalls Point pillowed and massive basalt
Geological contact (approximate, extrapolated)- NATMAP Shield Margin Project Working Group, 1998
Fault (approximate)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 91487, 92654)
Drillhole (A.F. 91487, 92654)
28. Mineral occurrence location

Figure 28-1: Geological setting of Rod occurrence.

LOCATION: 29

NAME: Beta
UTM: 375755E, 6079620N
AREA: approximately 0.6 km W of south end of Long Bay, Elbow Lake
ACCESS: via bush plane or by boat through the Cranberry Lakes from Cranberry Portage, then traverse
AIRPHOTO: MB90025-139

EXPLORATION SUMMARY

The claim was staked in 1933 and several trenches excavated (Stockwell, 1935). In 1986 the occurrence area was mapped and sampled (A.F. 93250). This assessment file indicates that some of the work was performed on the Rod occurrence, but the western trenches are located at the Beta occurrence.

In 1992 a stripped and trenched area was located; most of the excavations were flooded or overgrown, and bedrock was only poorly exposed.

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 29-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by massive, coarse-grained pyroxenite and melagabbro, coarse-grained gabbro to hornblende-biotite diorite (unit P2d) of the Echo Lake pluton, gabbro and melagabbro of the Long Bay gabbro complex, and the Long Bay basaltic conglomerate (unit F3c) (Syme, 1991; Whalen, 1991, 1992; Syme and Whalen, 1992).

The occurrence is located in a series of intrusive rocks that are dominated by a hornblende-rich granite, in places becoming a hornblendite. Irregular fine-grained intermediate to felsic dykes of several generations are common in the area.

MINERALIZATION

The location of the trenches is shown in Fig. 29-2 and 29-3. A chloritic schistose area along the SE margin of a fine-grained intermediate to felsic dyke contains a quartz vein and quartz masses (Fig. 29-2). The quartz vein trends 035°, is up to 70 cm thick and locally contains up to 15% disseminated pyrite. Minor chalcopyrite is present, and is rarely stained with malachite and azurite. Angular wallrock fragments are common inclusions. At the north end of the main series of trenches, the quartz vein and schistose area is truncated by an irregular fine-grained felsic dyke (Fig. 29-2).

GEOCHEMICAL DATA

Assays from grab samples collected from various trenches in the occurrence area returned assays ranging from trace to 3.08 g Au/t (to 0.09 oz. Au/ton) and up to 2.14% Cu (A.F. 93250).

CLASSIFICATION

Vein type deposit; single vein. In chlorite schist adjacent to fine-grained intermediate to felsic dyke.

REFERENCES

A.F. 91487, 92654, 93250; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

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Syme, E.C. and Whalen, J.B.

1992: Geology, Elbow Lake, Manitoba; Geological Survey of Canada, Preliminary 1:20 000 map, Shield-Margin Project, File ELBOW92.PS.

Whalen, J.B.

1991: Elbow Lake project - Part B: Granitoid rocks; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1991, pp. 28-30.

1992: Elbow Lake project - Part B: Granitoid rocks; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1992, pp. 47-51.

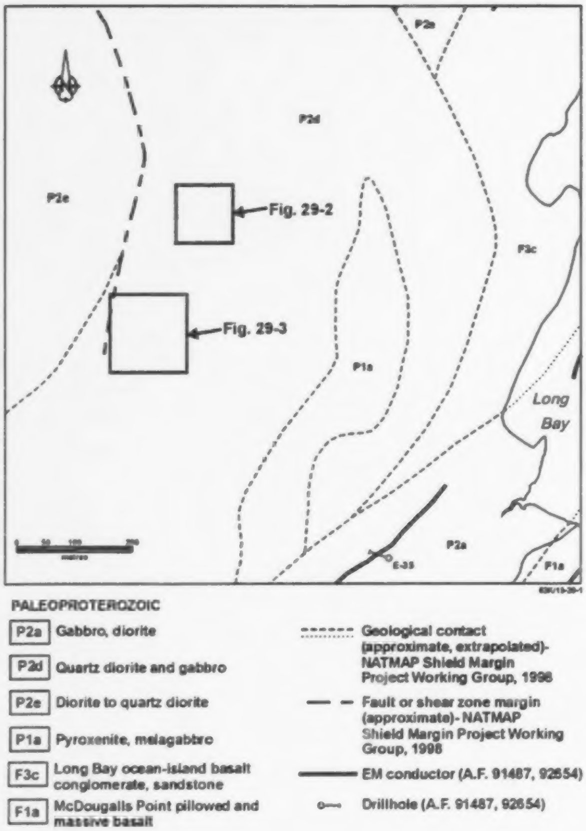
P2e
P2d
P2a
F3c
P1a
F1a
Fig. 29-2
Fig. 29-3
Long Bay
E-35
metres
PALEOPROTEROZOIC
P2a Gabbro, diorite
P2d Quartz diorite and gabbro
P2e Diorite to quartz diorite
P1a Pyroxenite, melagabbro
F3c Long Bay ocean-island basalt conglomerate, sandstone
F1a McDougalls Point pillowed and massive basalt
Geological contact (approximate, extrapolated)- NATMAP Shield Margin Project Working Group, 1998
Fault or shear zone margin (approximate)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 91487, 92654)
Drillhole (A.F. 91487, 92654)

Figure 29-1: Geological setting of Beta occurrence.

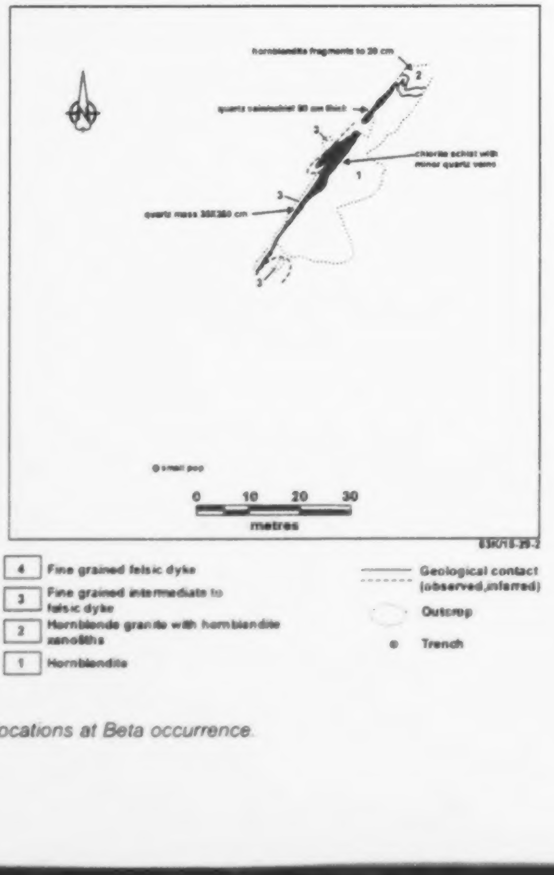
hornblendite fragments to 20 cm
chlorite schist with minor quartz veins
1
2
3
0
10
20
30
metres
4 Fine grained felsic dyke
3 Fine grained intermediate to felsic dyke
2 Hornblende granite with hornblendite xenoliths
1 Hornblendite
Geological contact (observed,inferred)
Outcrop
Trench

Figure 29-2: Geology and trench locations at Beta occurrence.

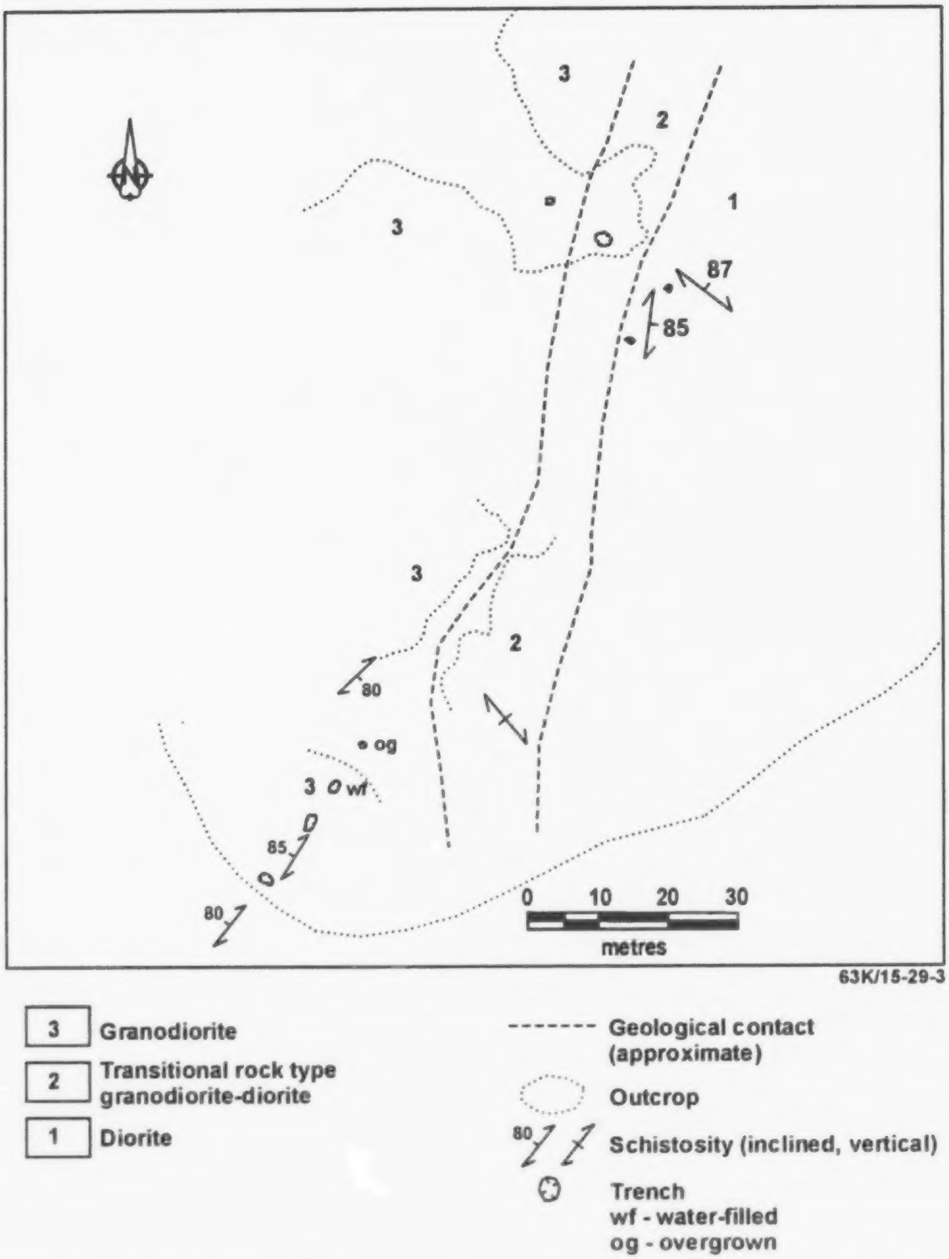
N
3
2
1
3
87
85
3
2
80
og
3
wf
85
80
0
10
20
30
metres
63K/15-29-3
3 Granodiorite
2 Transitional rock type granodiorite-diorite
1 Diorite
Geological contact (approximate)
Outcrop
80 Schistosity (inclined, vertical)
Trench
wf - water-filled
og - overgrown

Figure 29-3: Geology and trench locations at Beta occurrence.

LOCATION: 30

NAME: Moneystone
UTM: 375450E, 6080725N
AREA: approximately 1.3 km W of north end of Long Bay, Elbow Lake
ACCESS: via bush plane or by boat through the Cranberry Lakes from Cranberry Portage, then traverse
AIRPHOTO: MB90025-139

EXPLORATION SUMMARY

Stockwell (1935) indicates that this occurrence was evaluated by a shaft and several trenches.

These were located during the 1992 examination of the occurrence.

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 30-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by granitoid rocks (unit P2d) of the Echo Lake pluton (Whalen, 1991, 1992; Syme and Whalen, 1992). This pluton is bounded to the east by the Tee Lake dyke complex (unit J13d) (Syme, 1991).

The occurrence is hosted by medium-grained, massive quartz diorite. The diorite is intruded by an easterly-striking feldspar porphyry dyke that also cuts the quartz-bearing shear zone.

MINERALIZATION

A quartz vein up to 60 cm thick occurs in a shear zone that cuts pink and medium green quartz diorite. The vein trends 210/65°, contains minor carbonate and can be traced for approximately 65 m along strike. The quartz has moderately limonitic fractures and contains wallrock inclusions, but no sulphides were observed. Stockwell (1935) indicates that minor disseminated pyrite is present in the vein.

GEOCHEMICAL DATA

No assays were reported for this occurrence.

CLASSIFICATION

Vein type deposit; single vein. In a narrow shear zone that cuts quartz diorite.

REFERENCES

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

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1992: Elbow Lake project - Part B: Granitoid rocks; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1992, pp. 47-51.

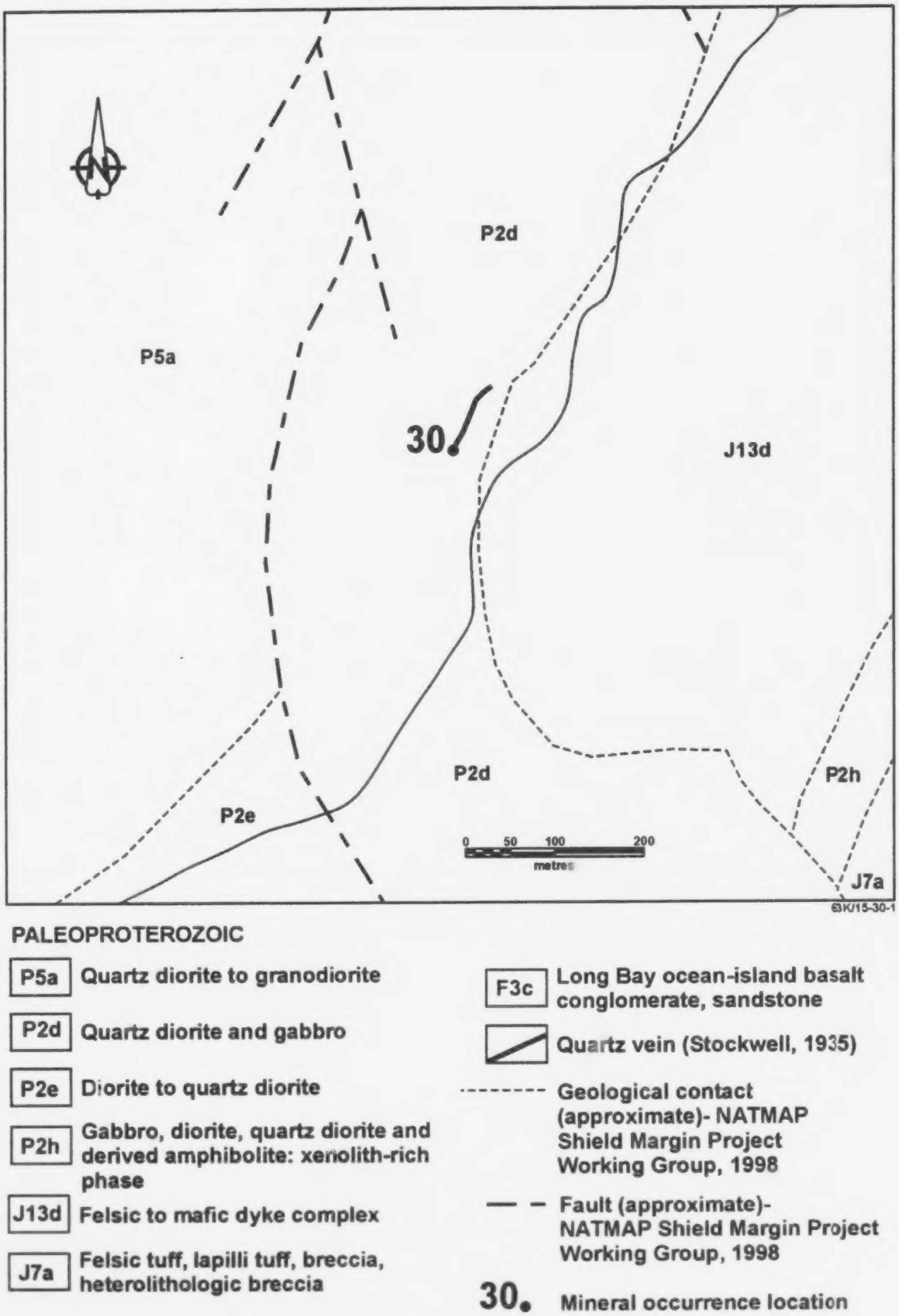
P2d
P5a
30
J13d
P2d
P2h
P2e
J7a
0 50 100 200
metres
63K/15-30-1
PALEOPROTEROZOIC
P5a Quartz diorite to granodiorite
P2d Quartz diorite and gabbro
P2e Diorite to quartz diorite
P2h Gabbro, diorite, quartz diorite and derived amphibolite: xenolith-rich phase
J13d Felsic to mafic dyke complex
J7a Felsic tuff, lapilli tuff, breccia, heterolithologic breccia
F3c Long Bay ocean-island basalt conglomerate, sandstone
Quartz vein (Stockwell, 1935)
Geological contact (approximate)- NATMAP Shield Margin Project Working Group, 1998
Fault (approximate)- NATMAP Shield Margin Project Working Group, 1998
30. Mineral occurrence location

Figure 30-1: Geological setting of Moneystone occurrence.

LOCATION: 31

NAME: Gunwor
UTM: 375640E, 6080685N
AREA: approximately 1.1 km W of north end of Long Bay, Elbow Lake
ACCESS: via bush plane or by boat through the Cranberry Lakes from Cranberry Portage, then traverse
AIRPHOTO: MB90025-139

EXPLORATION SUMMARY

Gold was discovered at the occurrence in 1933 (Stockwell, 1935), and by 1934 several quartz veins had been evaluated in two shafts approximately 7 m (24 ft.) deep and 45 trenches. In 1963 Juma Mining and Exploration Limited performed a magnetic survey of the area and undertook a geological mapping and diamond drilling programme. Twelve holes were subsequently drilled on geological and magnetic targets (A.F. 91955).

The shafts and trenches were located during the 1992 field examination of the property. Most of the excavations had caved and the bedrock obscured. Many of the trees burned during the 1989 fire have blown over, and the old trenches and outcrops are further obscured by deadfall and new growth. Two trenches at the north end of the occurrence appear to have been excavated fairly recently.

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 31-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by an assemblage consisting of diabase, rhyolite, leucotonalite, plagioclase- and plagioclase-amphibole mafic porphyry, and plagioclase-quartz felsic porphyry dykes emplaced in hornfelsed pillowed basalt flows (unit J13d). These units comprise part of the Tee Lake dyke complex (Syme, 1991, 1992). Various granitoid rocks (unit P2d) of the Echo Lake pluton occur a short distance to the west of the complex (Whalen, 1991, 1992; Syme and Whalen, 1992).

The rocks at the occurrence consist dominantly of fine-grained basalt flows (Fig. 31-2 and –3). The flows have a moderately well developed schistosity that trends northeasterly with a dip ranging from 60 to 85° SE. Some outcrops show a steep southwesterly dip. Minor rhyolitic units are intercalated with the basalt, trending at a slight angle to the regional schistosity. The assemblage is cut by a variety of dykes including quartz porphyry, quartz-feldspar porphyry, intermediate ("dacite") porphyry, and quartz diorite. The latter lithology is probably related to the Echo Lake pluton.

Two trenches at the north part of the occurrence are fairly recent excavations, although no information about them is available in the cancelled assessment files. They expose a light brown, fine-grained, quartz-porphyritic felsic dyke. This unit trends to the NNE and dips vertically. Contacts with the surrounding basalt are sharp, but are irregular in detail.

MINERALIZATION

Stockwell (1935) described 7 quartz veins at the occurrence, and his work provides the basis for the current description. The veins comprise two sets that trend east-northeasterly and northerly.

Veins #1 and #2 (Fig. 31-3) appear to have received the most attention. The ENE-trending north dipping #1 vein has been traced in outcrop and trenches along a strike length of approximately 90 m (300 ft.). The western 25 m of the vein has been offset approximately 5 m to the north by a fault. The vein varies from 15 to 90 cm in thickness and has been followed down-dip in a shaft for approximately 7 m. It is located within a schistose interval 0.9 to 1.5 m thick at the contact of basalt with rhyolite, although it can locally be exclusively hosted by either unit. The quartz vein and adjacent schistose wallrock contain disseminated and small lenses of pyrite. Trace amounts of chalcopyrite and sphalerite are also present in the quartz vein. Petrographic investigations have shown that the pyrite contains small amounts of gold.

The #2 vein has been traced along strike for approximately 90 m and is hosted by a schistose and massive rhyolite dyke up to 3 m thick. The quartz vein consists of a discontinuous series of lenses up to 60 cm thick. The lenses pinch out along strike. A lens 15 m long occurs at the western end of the vein, and a shaft was sunk at its centre part. The quartz is well mineralized with pyrite and chalcopyrite that occur as disseminations, bands and irregular short veinlets. In the most easterly exposure of this vein, quartz and schist are exposed across a width of 3.7 m. Both the schist and the quartz veins are contorted and "drag-folded". A 30 cm thick quartz vein occurs in the south part of the trench at the contact of the rhyolite with the basalt. The vein continues for approximately 6 m to the east of the trench and has been drag folded along a north-trending sinistral fault. A similar-looking rhyolitic unit occurs approximately 15 m north of the vein and continues east of the fault but does not contain the extension of the vein.

The #3 vein (Fig. 31-2) is a NNE striking structure in basalt that has been followed in trenches for approximately 45 m. It consists of quartz lenses up to 45 cm thick that occur in a schistose interval up to 2.1 m thick. The quartz contains patches of carbonate with minor pyrite and chalcopyrite.

The northerly-striking #4 vein (Fig. 31-3) occurs in a fault that cuts basalt. The basalt contains irregular units of fine-grained quartz diorite and a quartz-feldspar porphyry dyke. Quartz lenses up to 15 cm thick occur in the schist of the fault.

The #5 vein (Fig. 31-3) consists of a series of disconnected veins and lenses that have been traced north-northeasterly within a 0.9 to 5.8 m thick schistose interval for approximately 60 m. One quartz lens is up to 2.4 m thick and can be followed along strike for approximately 11 m. The quartz contains patches and veinlets of carbonate, is well mineralized with pyrite and contains minor chalcopyrite and sphalerite.

The #6 vein (Fig. 31-3) has been traced for approximately 75 m within a northerly-striking schistose interval that cuts basalt. The schistose interval is usually not more than 45 cm thick, and the included quartz vein varies from 2 to 30 cm thick. The quartz is generally well mineralized with disseminated pyrite.

Vein #7 (Fig. 31-2) marks the discovery of gold at this occurrence. A quartz-feldspar porphyry dyke is cut by a network of quartz veinlets that contain carbonate, pyrite and chalcopyrite. Some of the fractures in the porphyry are filled with arsenopyrite or pyrite and sphalerite.

At Site 8 (Fig. 31-2) disseminated pyrite is common throughout the felsic dyke, as are irregular quartz stringers up to 2 cm thick. Minor malachite and rare azurite are present as fracture coatings. The basalt is limonitic at its contact with the felsic dyke, and disseminated pyrite comprises <1% of the rock.

Stockwell (1935) reported that initial work at the occurrence recovered a fair amount of free gold by panning surficial material and weathered rock from the #1 and #7 veins.

GEOCHEMICAL DATA

No assays were reported for this occurrence by Stockwell (1935). Samples collected by Juma Mining and Exploration Ltd. from the #1 vein returned the following assays (A.F. 91955):

#1 vein	chip sample	0.34 g Au/t across 1.1 m (0.01 oz. Au/ton across 3.5 ft.)
#1 vein	grab sample	6.16 g Au/t (0.18 oz. Au/ton)
hole M-4	25.5-25.8 m (83.8-84.8 ft.)	0.34 g Au/t (0.01 oz. Au/ton)
	27.3-27.5 m (89.6-90.1 ft.)	0.34 g Au/t (0.01 oz. Au/ton)
hole M-5	32.3-32.8 m (106.0-107.7 ft.)	0.68 g Au/t (0.02 oz. Au/ton)
	32.8-33.0 m (107.7-108.2 ft.)	0.34 g Au/t (0.01 oz. Au/ton)
hole M-6	76.1-76.3 m (249.7-250.3 ft.)	1.37 g Au/t (0.04 oz. Au/ton)
	76.3-76.7 m (250.3-251.8 ft.)	0.34 g Au/t (0.01 oz. Au/ton)

CLASSIFICATION

Vein type deposit; multiple veins or lenses. Quartz veins occur that cut basalt and are associated with rhyolite and rhyolitic dykes.

REFERENCES

A.F. 91955; Cancelled Assessment File, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

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Syme, E.C. and Whalen, J.B.

1992: Geology, Elbow Lake, Manitoba; Geological Survey of Canada, Preliminary 1:20 000 map, Shield-Margin Project, File ELBOW92.PS.

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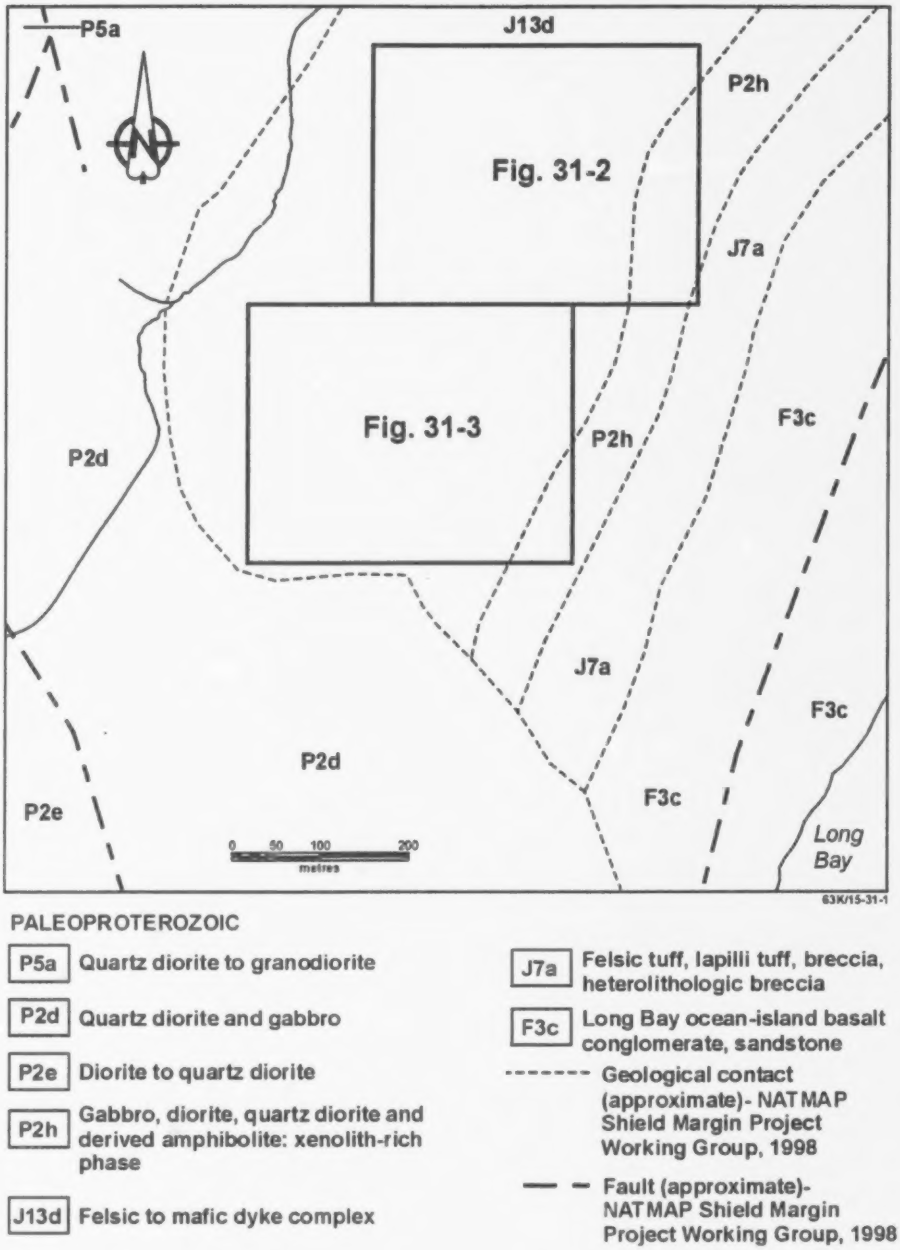

P5a
J13d
P2h
Fig. 31-2
J7a
Fig. 31-3
P2h
F3c
P2d
J7a
F3c
P2d
F3c
P2e
Long Bay
0 50 100 200
metres
63K/15-31-1
PALEOPROTEROZOIC
P5a Quartz diorite to granodiorite
P2d Quartz diorite and gabbro
P2e Diorite to quartz diorite
P2h Gabbro, diorite, quartz diorite and derived amphibolite: xenolith-rich phase
J13d Felsic to mafic dyke complex
J7a Felsic tuff, lapilli tuff, breccia, heterolithologic breccia
F3c Long Bay ocean-island basalt conglomerate, sandstone
Geological contact (approximate)- NATMAP Shield Margin Project Working Group, 1998
Fault (approximate)- NATMAP Shield Margin Project Working Group, 1998

Figure 31-1: Geological setting of Gunwor occurrence.

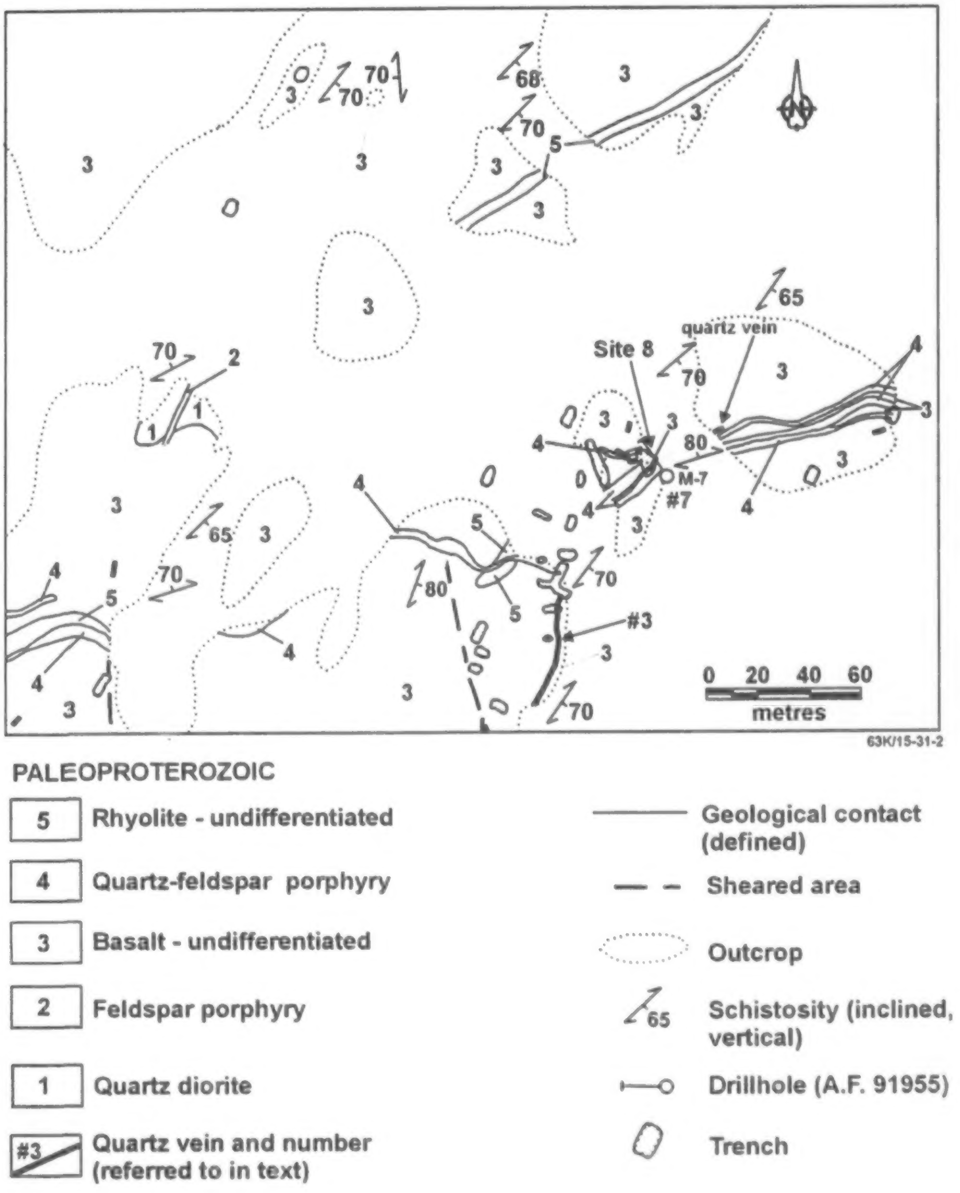
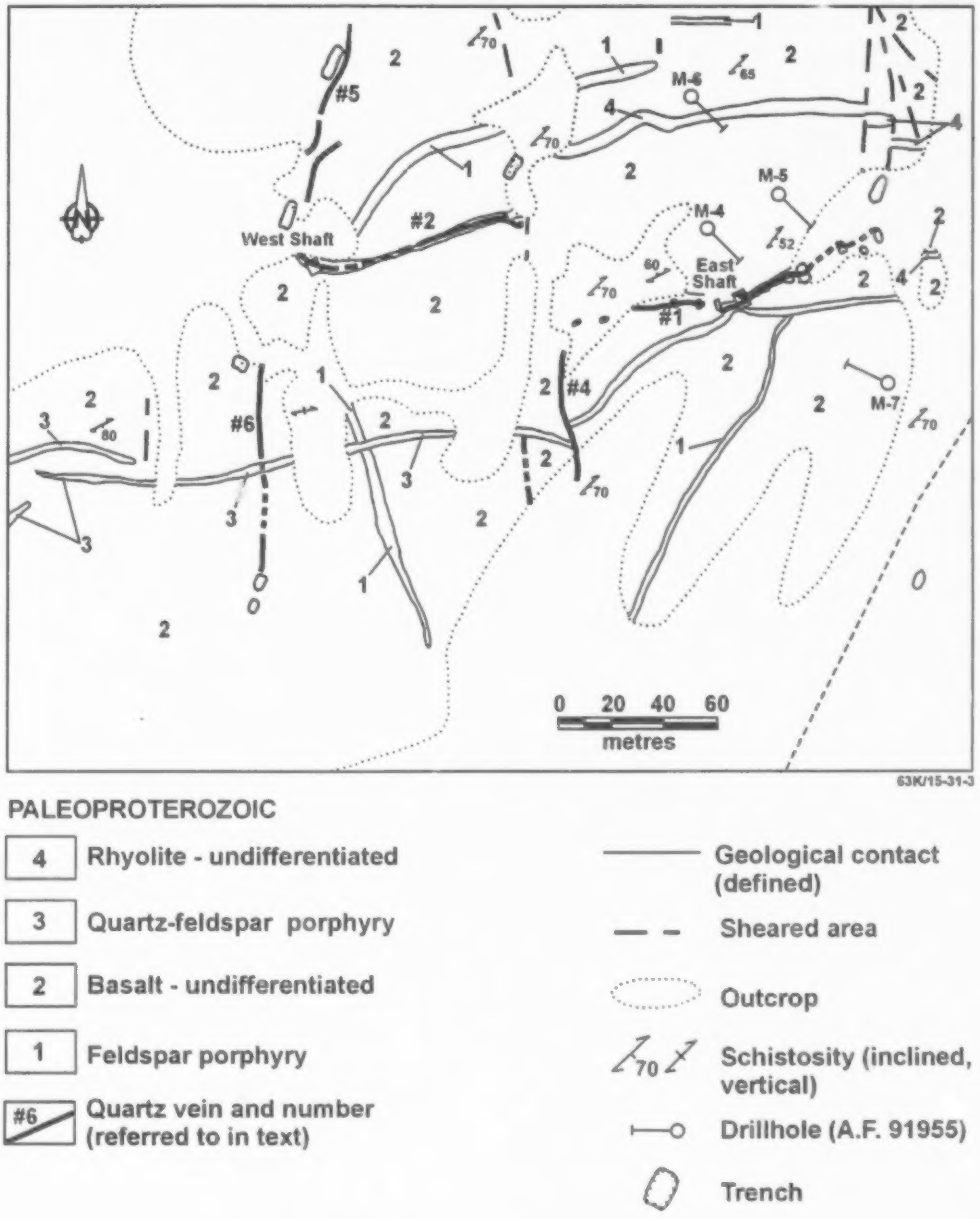

Site 8
quartz vein
M-7
#7
#3
0 20 40 60
metres
63K/15-31-2
PALEOPROTEROZOIC
5 Rhyolite - undifferentiated
4 Quartz-feldspar porphyry
3 Basalt - undifferentiated
2 Feldspar porphyry
1 Quartz diorite
#3 Quartz vein and number (referred to in text)
Geological contact (defined)
Sheared area
Outcrop
65 Schistosity (inclined, vertical)
Drillhole (A.F. 91955)
Trench

Figure 31-2: Detailed geology and trench locations at Gunwor occurrence.



#5
#2
#1
#4
#6
West Shaft
East Shaft
M-4
M-5
M-6
M-7
60
65
52
70
80
0 20 40 60
metres
63K/15-31-3
PALEOPROTEROZOIC
4 Rhyolite - undifferentiated
3 Quartz-feldspar porphyry
2 Basalt - undifferentiated
1 Feldspar porphyry
#6 Quartz vein and number (referred to in text)
Geological contact (defined)
Sheared area
Outcrop
70 Schistosity (inclined, vertical)
Drillhole (A.F. 91955)
Trench

Figure 31-3: Detailed geology, trench and shaft locations at Gunwor occurrence.

LOCATION: 32

NAME: Sherlock
UTM: 376410E, 6080445N
AREA: along northwest shore of Long Bay, Elbow Lake
ACCESS: via bush plane or by boat through the Cranberry Lakes from Cranberry Portage
AIRPHOTO: MB90025-139

EXPLORATION SUMMARY

The claim was staked in 1919 following the discovery of gold-bearing quartz. It is reported that Mr Thomas R. Webb panned about $800 worth of coarse gold from a small quartz lens at the occurrence. In 1922 a second quartz lens approximately 2.5 m long and up to 50 cm thick was uncovered: this proved to be spectacularly rich in gold (Armstrong, 1922). By 1930 a prospect shaft at least 9 m deep, an adit and 200 m of trenches had been excavated (Stockwell, 1935). In 1963 Juma Mining and Exploration Limited undertook a geological mapping programme and performed a magnetic survey of the area. Twelve holes were subsequently drilled on geological and magnetic targets (A.F. 91955).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 32-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by mafic volcaniclastic conglomerate, pebbly sandstone and sandstone (unit F3c) of the Long Bay picrite conglomerate (Syme, 1991). This metasedimentary unit is bounded to the WNW by the Webb Island rhyolite breccia (unit J7a), and to the ESE by pillowed and massive aphyric flows of the McDougalls Point basalt (unit F1a), which has been intruded by fine- to medium-grained equigranular gabbro (unit P2a) (Syme and Whalen, 1992).

Trenches and outcrops are shown in Fig. 32-2 to 32-4. The clastic assemblage comprises the host rock for the Sherlock occurrence. The dominant rock at the occurrence is a mafic sandstone with occasional thin polymictic pebbly intervals. Magnetite as disseminated grains is a common constituent in some of the finer-grained units, comprising up to 5% of the rock. Conglomeratic intervals become dominant in the WNW part of the occurrence. Syme (1991) has noted that clasts within the conglomeratic portion of this assemblage consist of basaltic scoria, basalt, diabase, gabbro, pyroxenite and jasper. Chert as conformable layers is present in the immediate occurrence area. Immediately to the northeast of the "shaft" there is a folded, fine-grained grey chert layer 2.9 m thick. Stockwell (1935) indicates that numerous cherty quartz lenses are irregularly distributed throughout the rocks of the area, and appear to represent conformable chert layers. Similar chert occurs as rounded clasts within conglomerate. Jasper pebbles up to 10 cm have been noted in exposures in the western part of the occurrence.

MINERALIZATION

One sample of quartz containing visible gold was found during the 1992 examination of the occurrence. The gold occurs in milky quartz lenses irregularly distributed through the metasedimentary rocks. The lenses are generally thin and discontinuous, and can be traced for only short distances along strike. They often have a lensoid character, are typically 5 to 20 cm thick, and are both conformable and discordant to the foliation of the host rocks.

GEOCHEMICAL DATA

No assays have been reported for this occurrence, although Stockwell (1935) indicates that the original discoverer "...panned about $800 of coarse gold from a small quartz lens during the preliminary prospecting of the deposit."

CLASSIFICATION

Vein type deposit; multiple veins or lenses. In mafic metasedimentary rocks derived from picritic volcanic rocks, and associated grey chert layers.

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1922: Geology and ore deposits of Elbow Lake area, northern Manitoba; in Geological Survey of Canada, Summary Report 1922, Part C, pp.37-44.

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Syme, E.C. and Whalen, J.B.

1992: Geology, Elbow Lake, Manitoba; Geological Survey of Canada, Preliminary 1:20 000 map, Shield-Margin Project, File ELBOW92.PS.

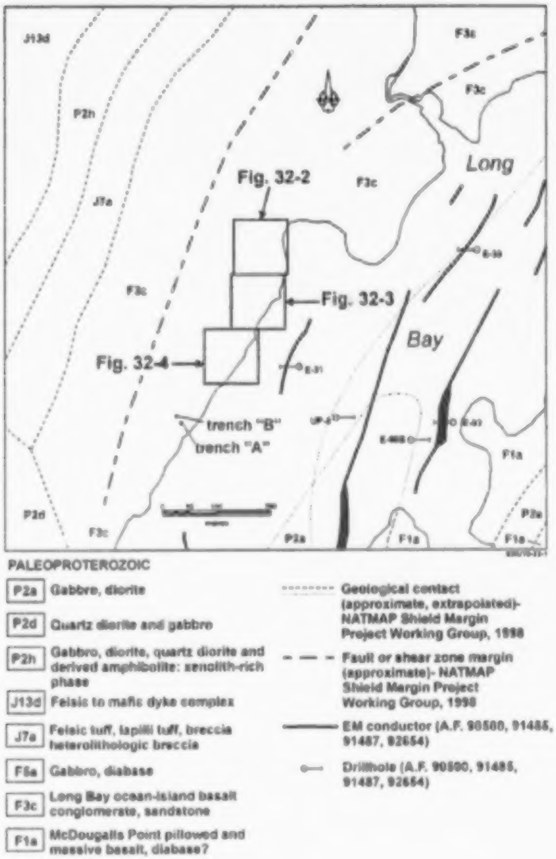

J13d
P2h
J7a
F3c
Fig. 32-2
Fig. 32-3
Fig. 32-4
Long
Bay
trench "B"
trench "A"
P2d
P2a
F1a
PALEOPROTEROZOIC
P2a Gabbro, diorite
P2d Quartz diorite and gabbro
P2h Gabbro, diorite, quartz diorite and derived amphibolite: xenolith-rich phase
J13d Felsic to mafic dyke complex
J7a Felsic tuff, lapilli tuff, breccia heterolithologic breccia
F5a Gabbro, diabase
F3c Long Bay ocean-island basalt conglomerate, sandstone
F1a McDougalls Point pillowed and massive basalt, diabase?
Geological contact (approximate, extrapolated)- NATMAP Shield Margin Project Working Group, 1998
Fault or shear zone margin (approximate)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 90580, 91485, 91487, 92654)
Drillhole (A.F. 90590, 91485, 91487, 92654)

Figure 32-1: Geological setting of Sherlock occurrence.

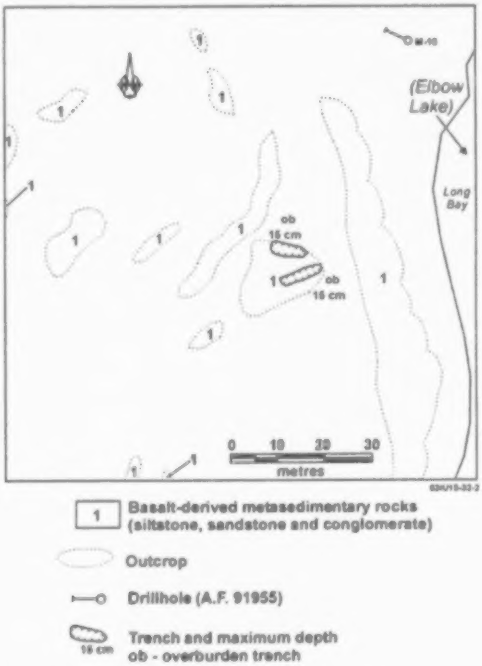

(Elbow Lake)
Long Bay
1
ob
15 cm
0
10
20
30
metres
Basalt-derived metasedimentary rocks (siltstone, sandstone and conglomerate)
Outcrop
Drillhole (A.F. 91955)
Trench and maximum depth
ob - overburden trench

Figure 32-2: Detailed geology and trench locations at Sherlock occurrence.

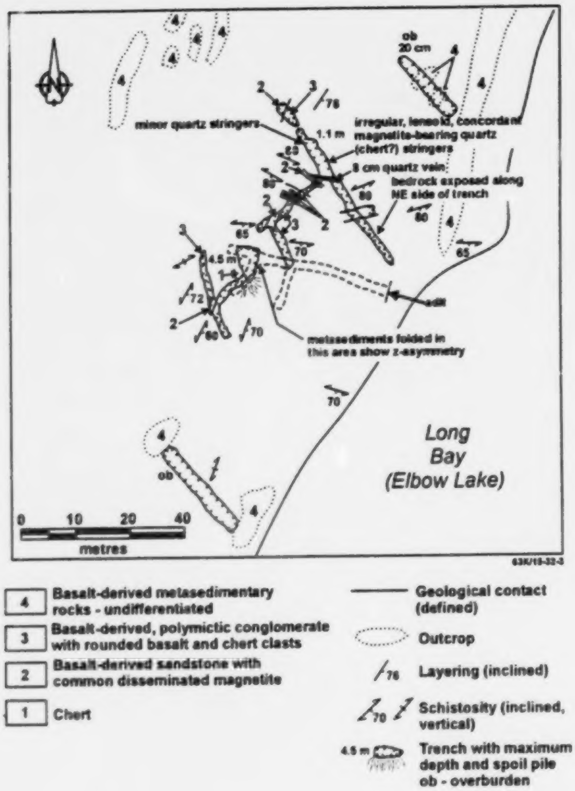

ob
20 cm
4
2
3
76
minor quartz stringers
1.1 m
irregular, lensoid, concordant magnetite-bearing quartz (chert?) stringers
8 cm quartz vein
bedrock exposed along NE side of trench
4.5 m
adit
metasediments folded in this area show z-asymmetry
72
60
70
65
80
Long Bay (Elbow Lake)
0 10 20 40
metres
63K/15-32-3
4 Basalt-derived metasedimentary rocks - undifferentiated
3 Basalt-derived, polymictic conglomerate with rounded basalt and chert clasts
2 Basalt-derived sandstone with common disseminated magnetite
1 Chert
Geological contact (defined)
Outcrop
Layering (inclined)
Schistosity (inclined, vertical)
Trench with maximum depth and spoil pile
ob - overburden

Figure 32-3: Detailed geology and workings at Sherlock occurrence.

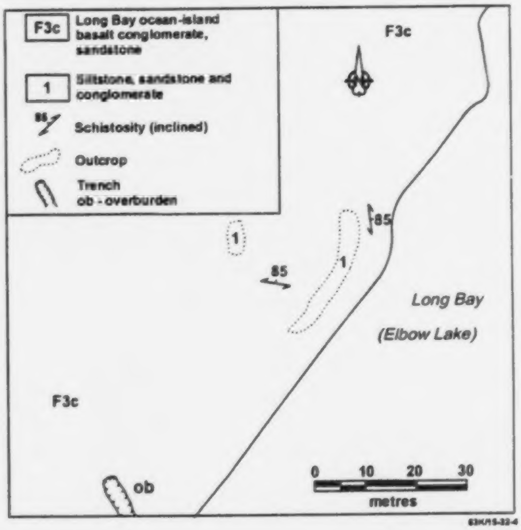

F3c Long Bay ocean-island basalt conglomerate, sandstone
1 Siltstone, sandstone and conglomerate
Schistosity (inclined)
Outcrop
Trench
ob - overburden
F3c
85
1
Long Bay
(Elbow Lake)
F3c
ob
0 10 20 30
metres
63K/15-32-4

Figure 32-4: Detailed geology and trench locations at Sherlock occurrence.

LOCATION: 33

NAME: H.M.B.
UTM: 378230E, 6082815N
AREA: along NW shore of Elbow Lake, approximately 150 m W of small bay north of Webb Island
ACCESS: via bush plane or by boat through the Cranberry Lakes from Cranberry Portage, then traverse
AIRPHOTO: MB90025-116

EXPLORATION SUMMARY

The ownership history of the occurrence is outlined in Manitoba Energy and Mines Mineral Inventory File No. 787. It was staked in 1933 and a trench excavated.

A trench and an area where the edge of an outcrop has been blasted were located during the 1992 examination of the occurrence. Both of the excavations are overgrown and bedrock is poorly exposed.

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 33-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by aphyric pillowed flows (unit J1a) of the Webb Island basalt. It is bounded to the SE by fine-grained leucotonalite (unit P6c) and to the NW by medium- to coarse-grained equigranular gabbro (unit P2a).

The excavation along the western edge of the outcrop is at the contact of diorite with mafic volcanic rocks. It is unclear if the volcanic rocks are in place or represent a xenolith incorporated into the diorite. The largest trench at the occurrence has been excavated into a fine-grained siliceous rock, possibly dacite or rhyolite.

MINERALIZATION

The geological setting of the quartz vein in the area along the outcrop edge is uncertain. Locally, the quartz vein interfingers with the mafic volcanic rocks and the diorite, and is hosted by a schistose interval that crosscuts these units. Large pieces of quartz are present on the spoil piles along the margin of the excavation. Most of the quartz is barren, but some pieces are composed mainly of limonite that appear to be the weathering product of Fe-sulphides. The main trench at the occurrence exposes a discontinuous barren quartz vein. Euhedral pyrite grains to 5 mm and rare chalcopyrite grains are disseminated in the enclosing siliceous rock.

GEOCHEMICAL DATA

Stockwell (1935) indicates that mineralized schist was reported to contain 5.14 g Au/t (0.15 oz. Au/ton).

CLASSIFICATION

Vein type deposit; multiple veins or lenses. Hosted by schistose interval in diorite, and mafic and intermediate/ siliceous volcanic rocks.

REFERENCES

A.F. 90643, 92654; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

Mineral Inventory File No. 787

Manitoba Energy and Mines, Minerals Division

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Stockwell, C.H.

1935: Gold Deposits of the Elbow-Morton Area, Northern Manitoba; Geological Survey of Canada, Memoir 186, 74pp.

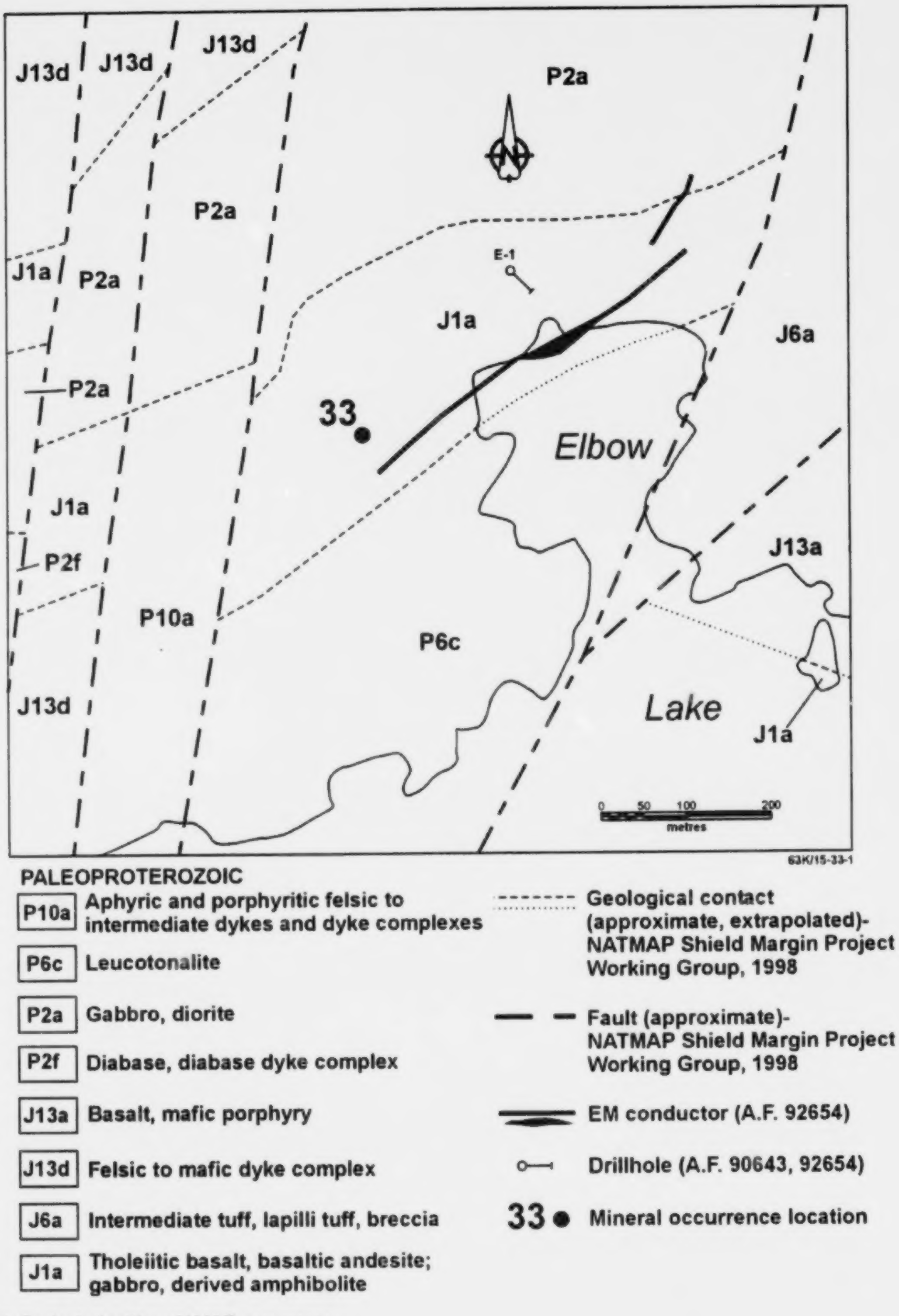

J13d
J13d
J13d
P2a
P2a
J1a
P2a
P2a
E-1
J1a
J6a
33
Elbow
J1a
P2f
J13a
P10a
P6c
J13d
Lake
J1a
0 50 100 200
metres
63K/15-33-1
PALEOPROTEROZOIC
P10a Aphyric and porphyritic felsic to intermediate dykes and dyke complexes
P6c Leucotonalite
P2a Gabbro, diorite
P2f Diabase, diabase dyke complex
J13a Basalt, mafic porphyry
J13d Felsic to mafic dyke complex
J6a Intermediate tuff, lapilli tuff, breccia
J1a Tholeiitic basalt, basaltic andesite; gabbro, derived amphibolite
Geological contact (approximate, extrapolated)- NATMAP Shield Margin Project Working Group, 1998
Fault (approximate)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 92654)
Drillhole (A.F. 90643, 92654)
33 Mineral occurrence location

Figure 33-1: Geological setting of H,M.B. occurrence.

LOCATION: 34

NAME: Dan
UTM: 377360E, 6082055N
AREA: near NW shore of Elbow Lake, approximately 0.3 km NW of shoreline NW of Webb Island
ACCESS: via bush plane or by boat through the Cranberry Lakes from Cranberry Portage, then traverse
AIRPHOTO: MB90025-116

EXPLORATION SUMMARY

The Dan occurrence was staked in 1924. A trench 3.7 m (12.0 ft.) deep was excavated across approximately 2.4 m (8.0 ft.) of quartz and mafic schist (Stockwell, 1935). In 1963 Juma Mining and Exploration Limited undertook a geological mapping programme and performed a magnetic survey of the area. Twelve holes were subsequently drilled on geological and magnetic targets (A.F. 91955).

Several trenches and a drill hole casing trending 137°/-50° were found at the occurrence. All trenches are overgrown or flooded, and little bedrock is exposed. The 1989 fire that affected most of the Elbow Lake area had little affect on the vegetation in this area, and outcrops at the occurrence remain lichen covered.

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 34-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by a diabase dyke intrusive complex (unit P2f), part of which belongs to the Tee Lake dyke complex, aphyric amoeboid pillow breccia of the Webb Island basalt (unit J1a), and gabbro and gabbroic intrusion breccia (unit P2h). The intrusive complex consists of diabase, diabasic pegmatite, andesite, rhyolite, fine-grained leucotonalite, plagioclase-amphibole porphyry, plagioclase porphyry, quartz-feldspar porphyry and screens of pillowed basalt (Syme, 1991; Syme and Whalen, 1992).

Trench locations are shown in Fig. 34-2, 34-3 and 34-4. Outcrops in the vicinity of the trenches consist primarily of mafic volcanic rocks. A schistose graphitic unit (argillite?) trending 075°/80°SSE is exposed in the southwestern trenches.

MINERALIZATION

The spoil piles adjacent to the two northern trenches contain abundant white quartz blocks. No quartz was noted at the southern trenches, but the rocks are strongly foliated and appear to be sheared. Outcrops in the area contain quartz masses and/or veins. The quartz veins appear to be barren, although Stockwell (1935) noted the presence of grains and streaks of pyrite.

GEOCHEMICAL DATA

Stockwell (1935) indicated that the following assays were obtained from channel samples collected from the deep trench at this occurrence:

4.79 g Au/t across 0.46 m (0.14 oz. Au/ton across 1.5 ft.)

7.88 g Au/t across 0.46 m (0.23 oz. Au/ton across 1.5 ft.)

1.71 g Au/t across 1.52 m (0.05 oz. Au/ton across 5.0 ft.)

CLASSIFICATION

Vein type deposit; multiple veins or lenses.

REFERENCES

A.F. 91955; Cancelled Assessment File, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Stockwell, C.H.

1935: Gold Deposits of the Elbow-Morton Area, Northern Manitoba; Geological Survey of Canada, Memoir 186, 74pp.

Syme, E.C.

1991: Elbow Lake project - Part A: supracrustal rocks and structural setting; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1991, pp.14-27.

Syme, E.C. and Whalen, J.B.

1992: Geology, Elbow Lake, Manitoba; Geological Survey of Canada, Preliminary 1:20 000 map, Shield-Margin Project, File ELBOW92.PS.

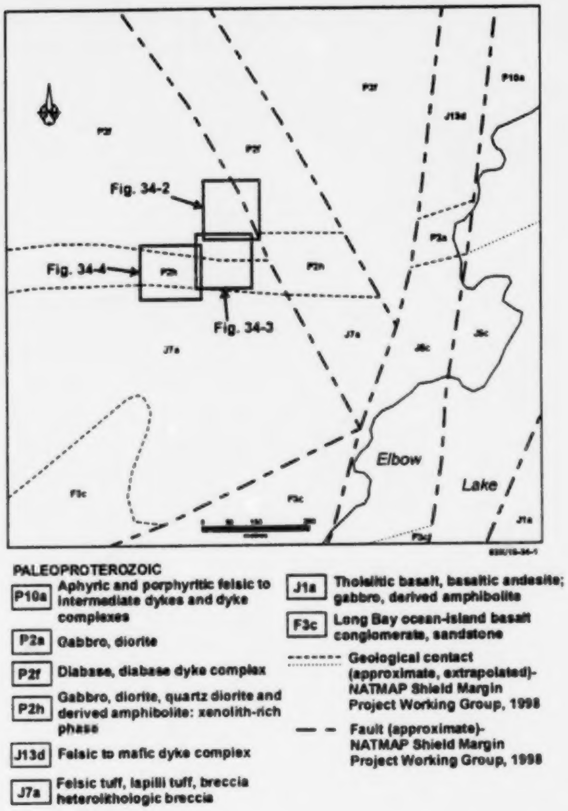

P21
P2f
P2f
P2f
P10a
J13d
Fig. 34-2
Fig. 34-4
Fig. 34-3
P2a
P2h
P2h
J7a
J7a
J6c
J6c
F3c
F3c
F3c
Elbow
Lake
J1a
PALEOPROTEROZOIC
P10a Aphyric and porphyritic felsic to intermediate dykes and dyke complexes
P2a Gabbro, diorite
P2f Diabase, diabase dyke complex
P2h Gabbro, diorite, quartz diorite and derived amphibolite: xenolith-rich phase
J13d Felsic to mafic dyke complex
J7a Felsic tuff, lapilli tuff, breccia heterolithologic breccia
J1a Tholeiitic basalt, basaltic andesite; gabbro, derived amphibolite
F3c Long Bay ocean-island basalt conglomerate, sandstone
Geological contact (approximate, extrapolated)- NATMAP Shield Margin Project Working Group, 1998
Fault (approximate)- NATMAP Shield Margin Project Working Group, 1998

Figure 34-1: Geological setting of Dan occurrence.

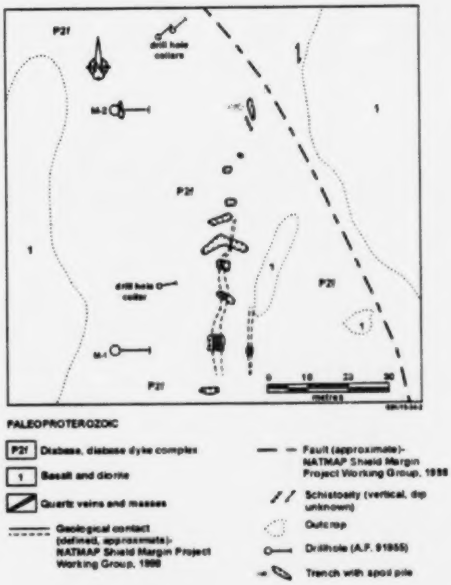

P2f
drill hole collars
M-2
1
1
P2f
1
drill hole collar
P2f
1
M-1
P2f
0
10
20
30
metres
PALEOPROTEROZOIC
P2f Diabase, diabase dyke complex
1 Basalt and diorite
Quartz veins and masses
Geological contact (defined, approximate)- NATMAP Shield Margin Project Working Group, 1998
Fault (approximate)- NATMAP Shield Margin Project Working Group, 1998
Schistosity (vertical, dip unknown)
Outcrop
Drillhole (A.F. 91955)
Trench with spoil pile

Figure 34-2: Geology and trench locations at Dan occurrence.

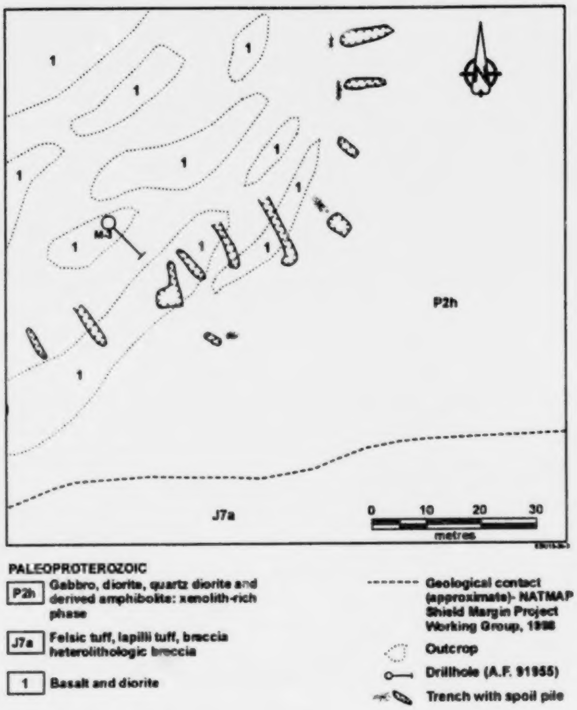

1
P2h
J7a
0
10
20
30
metres
PALEOPROTEROZOIC
P2h Gabbro, diorite, quartz diorite and derived amphibolite: xenolith-rich phase
J7a Felsic tuff, lapilli tuff, breccia heterolithologic breccia
1 Basalt and diorite
Geological contact (approximate)- NATMAP Shield Margin Project Working Group, 1998
Outcrop
Drillhole (A.F. 91955)
Trench with spoil pile

Figure 34-3: Geology and trench locations at Dan occurrence.

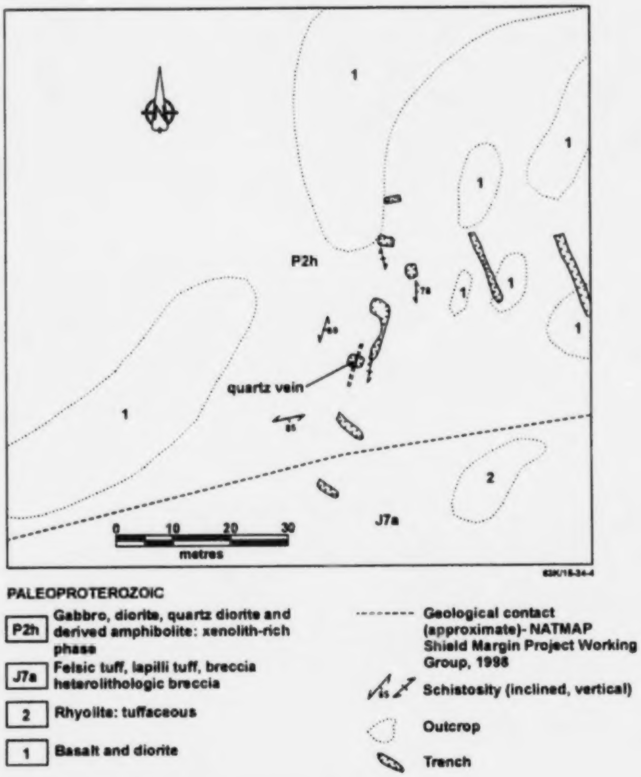

1
P2h
quartz vein
78
88
85
2
J7a
0
10
20
30
metres
PALEOPROTEROZOIC
P2h Gabbro, diorite, quartz diorite and derived amphibolite: xenolith-rich phase
J7a Felsic tuff, lapilli tuff, breccia heterolithologic breccia
2 Rhyolite: tuffaceous
1 Basalt and diorite
Geological contact (approximate)- NATMAP Shield Margin Project Working Group, 1998
Schistosity (inclined, vertical)
Outcrop
Trench

Figure 34-4: Geology and trench locations at Dan occurrence.

LOCATION: 35

NAME: Bell-Apex No.1
UTM: 377750E, 6082305N
AREA: near NW shore of Elbow Lake, approximately 150 m W of shoreline NW of Webb Island
ACCESS: via bush plane or by boat through the Cranberry Lakes from Cranberry Portage, then traverse
AIRPHOTO: MB90025-141

EXPLORATION SUMMARY

The Bell claim was staked in 1932 and the Apex No.1 claim in 1933. The quartz vein is poorly exposed in outcrop and trenches for a strike length of approximately 140 m (450 ft.) (Stockwell, 1935). McGlynn (1959) indicated that some diamond drilling had been undertaken on the Vanderberg claim group staked over the former Bell and Apex Nos. 1, 2 and 3 claims. In 1963 Juma Mining and Exploration Limited undertook a geological mapping programme and performed a magnetic survey of the area. Twelve holes were subsequently drilled on geological and magnetic targets (A.F. 91955).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 35-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by a diabase dyke intrusive complex (unit J13d), part of which belongs to the Tee Lake dyke complex, aphyric amoeboid pillow breccia of the Webb Island basalt (unit J1a), and gabbro and gabbroic intrusion breccia (unit P2f). The intrusive complex consists of diabase, diabasic pegmatite, andesite, rhyolite, fine-grained leucotonalite, plagioclase-amphibole porphyry, plagioclase porphyry, quartz-feldspar porphyry and screens of pillowed basalt (Syme, 1991; Syme and Whalen, 1992). A series of steeply-dipping north-trending faults can be traced south from Tee Lake to Elbow Lake.

The occurrence is located in schist at the contact between diorite and basalt. The schistose interval represents a sinistral fault that shows a strike offset of approximately 230 m.

MINERALIZATION

Quartz veins at the occurrence are hosted by a schistose interval up to 5 m thick in mafic volcanic rock. The veins have been boudinaged and occur as lenses and bands up to 60 cm thick. Minor brown-weathering carbonate is associated with the quartz. Stockwell (1935) indicates that the quartz vein contains minor grains and stringers of pyrite and trace amounts of disseminated chalcopyrite.

GEOCHEMICAL DATA

Stockwell (1935) indicates the owner of the claim obtained an assay of 13.7 g Au/t (0.40 oz. Au/ton) from a chip sample across 2.4 m (8 ft.) of quartz and sulphide at the Bell claim. Samples obtained across 4.3 m (14 ft.) of vein and enclosing schist at the Apex No. 1 claim reportedly assayed 8.22 g Au/t (0.24 oz. Au/ton). The claim owner also reported that channel samples collected across quartz veins and schist assayed no less than 1.71 g Au/t (0.05 oz. Au/ton).

CLASSIFICATION

Vein type deposit; multiple veins or lenses. Quartz veins occur within a schistose interval at the contact between diorite and basalt.

REFERENCES

A.F. 91955, 92654; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

McGlynn, J.C.

1959: Elbow-Heming Lakes Area, Manitoba; Geological Survey of Canada, Memoir 305, 72 pp.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Stockwell, C.H.

1935: Gold Deposits of the Elbow-Morton Area, Northern Manitoba; Geological Survey of Canada, Memoir 186, 74pp.

Syme, E.C.

1991: Elbow Lake project - Part A: supracrustal rocks and structural setting; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1991, pp.14-27.

Syme, E.C. and Whalen, J.B.

1992: Geology, Elbow Lake, Manitoba; Geological Survey of Canada, Preliminary 1:20 000 map, Shield-Margin Project, File ELBOW92.PS.

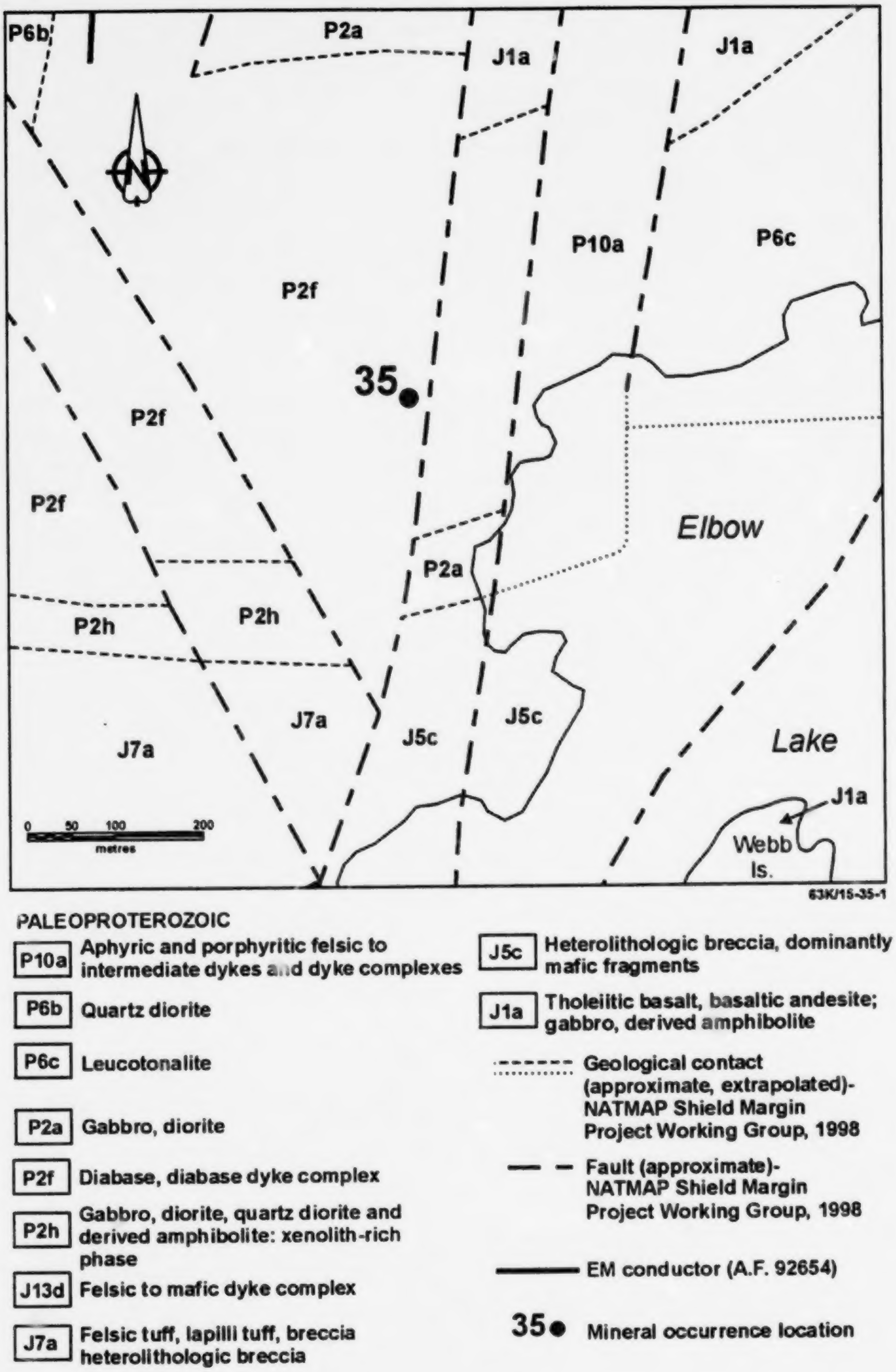

P6b
P2a
J1a
J1a
P10a
P6c
P2f
35
P2f
P2f
Elbow
P2a
P2h
P2h
J7a
J5c
J5c
J7a
Lake
J1a
Webb Is.
0 50 100 200
metres
63K/15-35-1
PALEOPROTEROZOIC
P10a Aphyric and porphyritic felsic to intermediate dykes and dyke complexes
P6b Quartz diorite
P6c Leucotonalite
P2a Gabbro, diorite
P2f Diabase, diabase dyke complex
P2h Gabbro, diorite, quartz diorite and derived amphibolite: xenolith-rich phase
J13d Felsic to mafic dyke complex
J7a Felsic tuff, lapilli tuff, breccia heterolithologic breccia
J5c Heterolithologic breccia, dominantly mafic fragments
J1a Tholeiitic basalt, basaltic andesite; gabbro, derived amphibolite
Geological contact (approximate, extrapolated)- NATMAP Shield Margin Project Working Group, 1998
Fault (approximate)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 92654)
35 ● Mineral occurrence location

Figure 35-1: Geological setting of Bell-Apex No. 1 occurrence.

LOCATION: 36

NAME: Apex No.2
UTM: 377920E, 6083335N
AREA: near NW shore of Elbow Lake, approximately 0.6 km NW of small bay north of Webb Island
ACCESS: via bush plane or by boat through the Cranberry Lakes from Cranberry Portage, then traverse
AIRPHOTO: MB90025-141

EXPLORATION SUMMARY

Stockwell (1935) indicates that the occurrence was staked in 1933 and is exposed in several trenches. McGlynn (1959) indicates that some diamond drilling had been undertaken on the Vanderberg claim group staked over the former Bell and Apex Nos. 1, 2 and 3 claims. In 1963 Juma Mining and Exploration Limited undertook a geological mapping programme and performed a magnetic survey of the area. Twelve holes were subsequently drilled on geological and magnetic targets (A.F. 91955).

Four trenches were found during the 1992 examination of the occurrence.

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 36-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by a diabase dyke intrusive complex (unit J13d), part of which belongs to the Tee Lake dyke complex, aphyric amoeboid pillow breccia of the Webb Island basalt (unit J1a), and a gabbro and gabbroic intrusion breccia (unit P2a). The intrusive complex consists of diabase, diabasic pegmatite, andesite, rhyolite, fine-grained leucotonalite, plagioclase-amphibole porphyry, plagioclase porphyry, quartz-feldspar porphyry and screens of pillowed basalt (Syme, 1991; Syme and Whalen, 1992).

The location of the trenches is shown in Fig. 36-2. At the occurrence fine-grained mafic volcanic rocks have been intruded by a series of east-west trending felsic dykes up to 20 m thick. The contacts of the felsic intrusion with the mafic volcanic rocks are sharp but irregular. Blocks of the enclosing mafic rock are common in the dyke. A north-trending shear zone cuts both rock types and hosts a quartz vein. No offset could be determined along this shear.

MINERALIZATION

A quartz vein 20 to 60 cm thick occurs within the schistose interval. The vein is not a continuous feature and was not observed in all of the trenches. It has probably been boudinaged within the shear zone. Brown weathering carbonate is a lesser constituent of the vein. Minor disseminated pyrite occurs within the quartz and enclosing rock, and trace amounts of chalcopyrite were noted.

GEOCHEMICAL DATA

No assays have been reported for this occurrence.

CLASSIFICATION

Vein type deposit; single vein. A quartz vein is hosted by a shear zone that transects mafic volcanic rock and a felsic intrusion.

REFERENCES

A.F. 91955; Cancelled Assessment File, Manitoba Industry, Trade and Mines, Minerals Division.

McGlynn, J.C.

1959: Elbow-Heming Lakes Area, Manitoba; Geological Survey of Canada, Memoir 305, 72 pp.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Stockwell, C.H.

1935: Gold Deposits of the Elbow-Morton Area, Northern Manitoba; Geological Survey of Canada, Memoir 186, 74pp.

Syme, E.C.

1991: Elbow Lake project - Part A: supracrustal rocks and structural setting; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1991, pp.14-27.

Syme, E.C. and Whalen, J.B.

1992: Geology, Elbow Lake, Manitoba; Geological Survey of Canada, Preliminary 1:20 000 map, Shield-Margin Project, File ELBOW92.PS.

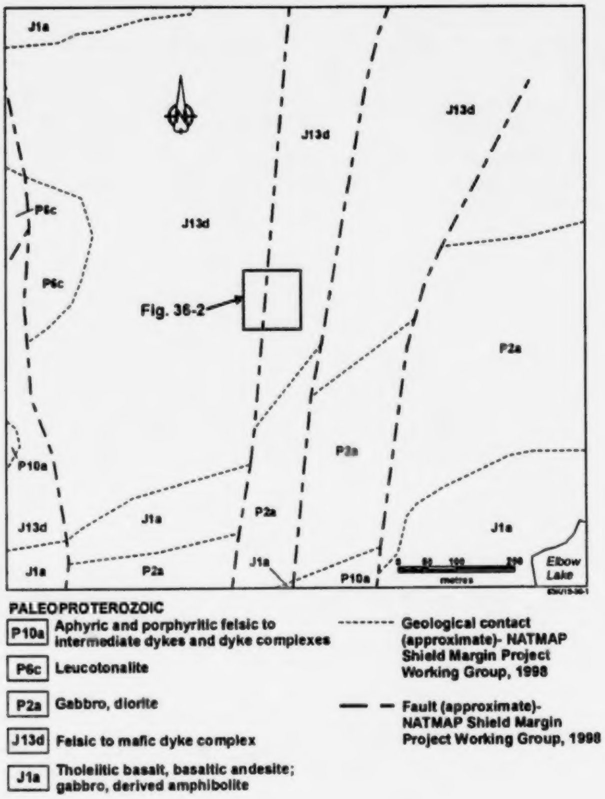

J1a
J13d
J13d
J13d
P6c
P6c
Fig. 36-2
P2a
P2a
P10a
J13d
J1a
P2a
J1a
P2a
J1a
P10a
J1a
0 50 100 200
metres
Elbow Lake
63K/15-36-1
PALEOPROTEROZOIC
P10a Aphyric and porphyritic felsic to intermediate dykes and dyke complexes
P6c Leucotonalite
P2a Gabbro, diorite
J13d Felsic to mafic dyke complex
J1a Tholeiitic basalt, basaltic andesite; gabbro, derived amphibolite
Geological contact (approximate)- NATMAP Shield Margin Project Working Group, 1998
Fault (approximate)- NATMAP Shield Margin Project Working Group, 1998

Figure 36-1: Geological setting of Apex No. 2 occurrence.

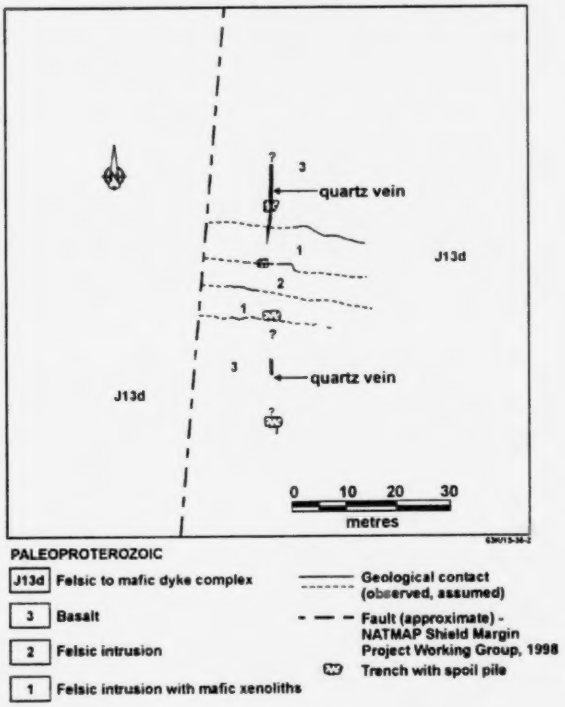

?
3
quartz vein
1
J13d
2
1
?
3
quartz vein
?
J13d
0 10 20 30
metres
63K/15-36-2
PALEOPROTEROZOIC
J13d Felsic to mafic dyke complex
3 Basalt
2 Felsic intrusion
1 Felsic intrusion with mafic xenoliths
Geological contact (observed, assumed)
Fault (approximate) - NATMAP Shield Margin Project Working Group, 1998
Trench with spoil pile

Figure 36-2: Detailed geology and trench locations at Apex No. 2 occurrence.

LOCATION: 37

NAME: Apex No.3
UTM: 378100E, 6083625N
AREA: near NW shore of Elbow Lake, approximately 0.8 km NNW of small bay north of Webb Island
ACCESS: via bush plane or by boat through the Cranberry Lakes from Cranberry Portage
AIRPHOTO: MB90025-141

EXPLORATION SUMMARY

Stockwell (1935) indicates that the occurrence was staked in 1933 and is exposed in several trenches. McGlynn (1959) indicates that some diamond drilling had been undertaken on the Vanderberg claim group that had been staked over the former Bell and Apex Nos. 1, 2 and 3 claims. In 1963 Juma Mining and Exploration Limited undertook a geological mapping programme and performed a magnetic survey of the area. Twelve holes were subsequently drilled on geological targets (A.F. 91955).

Eight trenches were located during the 1992 examination of the occurrence. Bedrock is only poorly exposed in these excavations.

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 37-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by a diabase dyke intrusive complex (grouped under unit J13d), part of which belongs to the Tee Lake dyke complex, aphyric amoeboid pillow breccia of the Webb Island basalt (unit J1a), and a gabbro and gabbroic intrusion breccia (unit P2a). The intrusion complex consists of diabase, diabasic pegmatite, andesite, rhyolite, fine-grained leucotonalite, plagioclase-amphibole porphyry, plagioclase porphyry, quartz-feldspar porphyry and screens of pillowed basalt (Syme, 1991; Syme and Whalen, 1992).

At the occurrence (Fig. 37-2 and 37-3) fine-grained mafic volcanic rocks have been intruded by a series of felsic and feldspar porphyry dykes that average 3 m thick. The contacts of the felsic intrusion with the mafic volcanic rocks are sharp, but irregular. A series of NNE to NE-trending, steeply dipping schistose intervals cut both rock types and provide the host for most of the quartz veins. No offset could be determined along these shears.

MINERALIZATION

Quartz veins occur in schistose intervals that cut both mafic and felsic lithologies. The veins occur as thin stringers and lenses and as discrete veins up to 110 cm thick. The veins show little strike continuity and have been boudinaged within the shears. Brown-weathering carbonate and dark green chlorite masses are minor constituents of the quartz veins. No sulphides were noted in the veins. Stockwell (1935) indicated that disseminated pyrite is a common minor constituent of the quartz veins, the enclosing schist and the porphyry, and that chalcopyrite and galena are also present.

GEOCHEMICAL DATA

Stockwell (1935) indicated that assays of channel samples taken across 0.9 to 1.5 m (3 to 5 ft.) of schist and quartz in the northern two trenches reportedly returned 6.16 and 5.82 g Au/t (0.18 and 0.17 oz. Au/ton). A channel sample across 1.8 m (6 ft.) of pyritic porphyry containing minor quartz stringers reportedly assayed 2.05 g Au/t (0.06 oz. Au/ton).

CLASSIFICATION

Vein type deposit; multiple veins or lenses. Quartz veins are hosted by shear zones that cut mafic volcanic and felsic intrusive rocks.

REFERENCES

A.F. 91955; Cancelled Assesment File, Manitoba Industry, Trade and Mines, Minerals Division.

McGlynn, J.C.

1959: Elbow-Heming Lakes Area, Manitoba; Geological Survey of Canada, Memoir 305, 72 pp.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Stockwell, C.H.

1935: Gold Deposits of the Elbow-Morton Area, Northern Manitoba; Geological Survey of Canada, Memoir 186, 74pp.

Syme, E.C.

1991: Elbow Lake project - Part A: supracrustal rocks and structural setting; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1991, pp.14-27.

Syme, E.C. and Whalen, J.B.

1992: Geology, Elbow Lake, Manitoba; Geological Survey of Canada, Preliminary 1:20 000 map, Shield-Margin Project, File ELBOW92.PS.

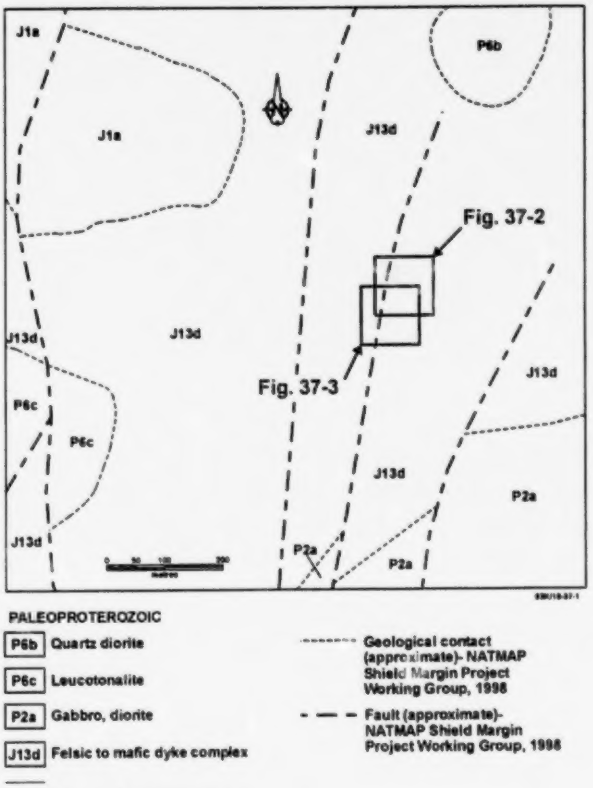

J1a
J1a
P6b
J13d
Fig. 37-2
J13d
J13d
Fig. 37-3
J13d
P6c
P6c
J13d
P2a
J13d
P2a
P2a
0
50
100
200
metres
PALEOPROTEROZOIC
P6b Quartz diorite
P6c Leucotonalite
P2a Gabbro, diorite
J13d Felsic to mafic dyke complex
Geological contact (approximate)- NATMAP Shield Margin Project Working Group, 1998
Fault (approximate)- NATMAP Shield Margin Project Working Group, 1998

Figure 37-1: Geological setting of Apex No. 3 occurrence.

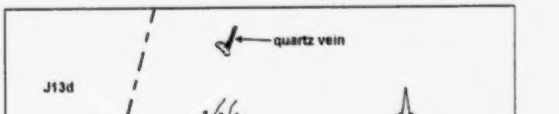

quartz vein
J13d
1
3
1
J13d
1
3
1
87
1
quartz vein
2
4
0
10
20
30
metres
PALEOPROTEROZOIC
J13d Felsic to mafic dyke complex
4 Chlorite schist
3 Feldspar porphyry dyke
2 Fine-grained felsic rock
1 Basalt, mafic volcanic rock
Geological contact (defined)
Fault (approximate) - NATMAP Shield Margin Project Working Group, 1998
87 Schistosity (inclined, dip unknown)
Outcrop
Trench with spoil pile

Figure 37-2: Geology and trench locations at Apex No. 3 occurrence.

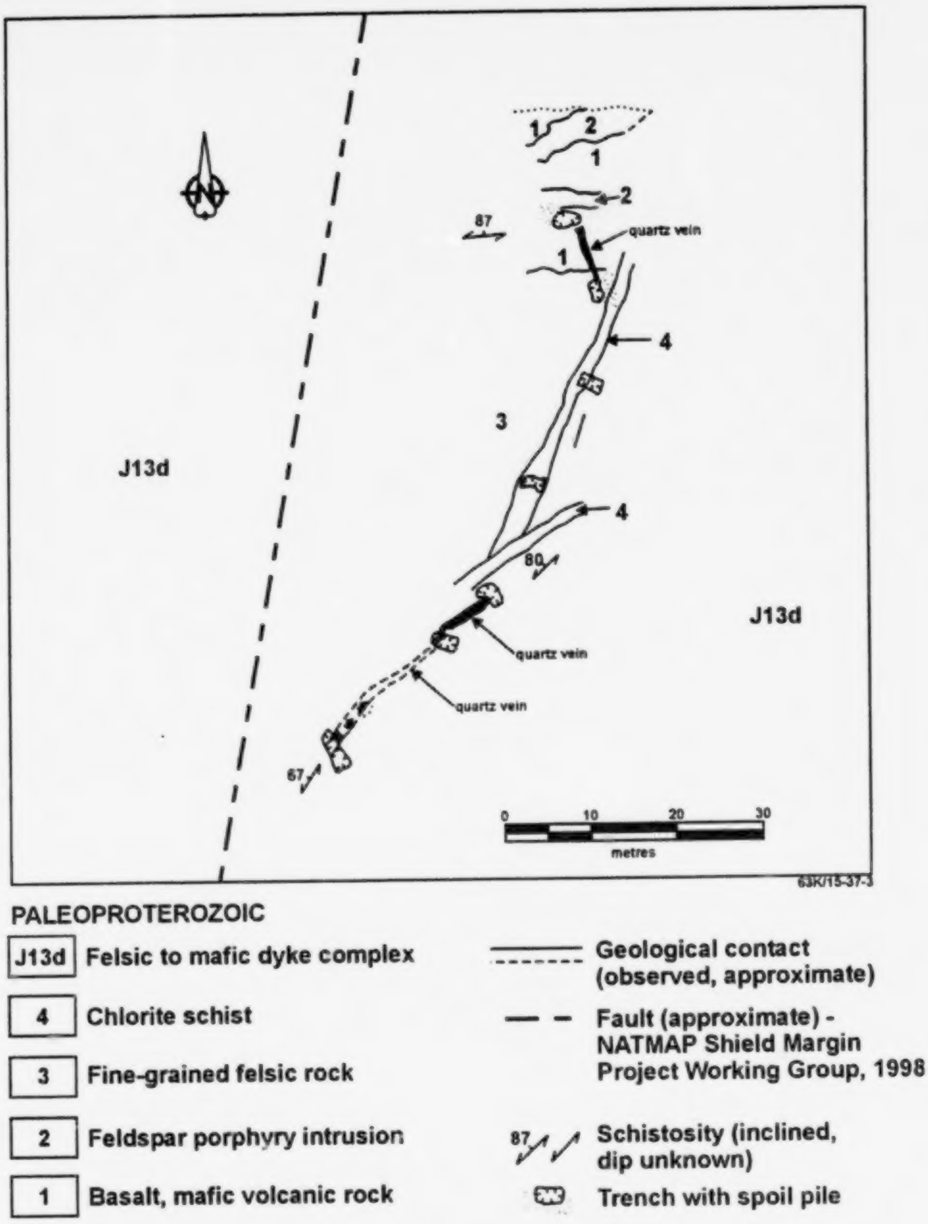

1
2
1
2
87
quartz vein
1
4
3
J13d
4
80
J13d
quartz vein
quartz vein
67
0
10
20
30
metres
63K/15-37-3
PALEOPROTEROZOIC
J13d Felsic to mafic dyke complex
4 Chlorite schist
3 Fine-grained felsic rock
2 Feldspar porphyry intrusion
1 Basalt, mafic volcanic rock
Geological contact (observed, approximate)
Fault (approximate) - NATMAP Shield Margin Project Working Group, 1998
87 Schistosity (inclined, dip unknown)
Trench with spoil pile

Figure 37-3: Geology and trench locations at Apex No. 3 occurrence.

LOCATION: 38

NAME:
UTM: 379840E, 6077970N
AREA: Smith Island, Elbow Lake
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage
AIRPHOTO: MB90025-120

EXPLORATION SUMMARY

This occurrence was staked in 1933 by Mr James A. Smith (Stockwell, 1935). Several pits were excavated, but no work has been recorded since that time.

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 38-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by schists (unit W6c) of the Elbow Lake shear zone (Galley *et al.*, 1987, 1989; Syme, 1990, 1991, 1992). The structure is approximately 1500 m thick in this area.

The rocks on Smith Island consist of chlorite and carbonate schists. The shear zone is crosscut by NNE-trending quartz and/or feldspar-phyric dykes. Several dioritic sills and/or dykes are also present. The rocks show a strong pervasive penetrative foliation that trends 025° and dips 85°SE. Dyke margins are schistose and some of the thinner feldspar porphyry dykes have been boudinaged. Several areas of carbonate alteration host deformed quartz-carbonate veins.

MINERALIZATION

Stockwell (1935) indicates that quartz veins occur in a quartz porphyry dyke that has been exposed at intervals for approximately 140 m (450 feet) from the north shore of the island. The porphyry is sparsely mineralized with disseminated arsenopyrite and pyrite. Quartz stringers within the porphyry carry minor sphalerite. Galley (field notes, 1987) indicates that the mineralization is associated with strongly hematitic alteration halos around a series of quartz-feldspar veins. The host schist to the porphyry contains deformed quartz veins and disseminated pyrite.

GEOCHEMICAL DATA

None

CLASSIFICATION

Vein type deposit; multiple veins or lenses. Associated with quartz porphyry dyke hosted by schists of the Elbow Lake shear zone.

REFERENCES

A.F. 91487, 92654; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

Galley, A.G., Ames, D.E. and Franklin, J.M.

1987: Geological setting of gold mineralization in the Elbow Lake region, Manitoba; in Manitoba Energy and Mines, Minerals Division, Report of Field Activities, 1987, pp.175-177.

1989: Results of studies on the gold metallogeny of the Flin Flon belt; in Investigations by the Geological Survey of Canada in Manitoba and Saskatchewan during the 1984-1989 Mineral Development Agreements, Geological Survey of Canada, Open File 2133, pp.25-32.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Stockwell, C.H.

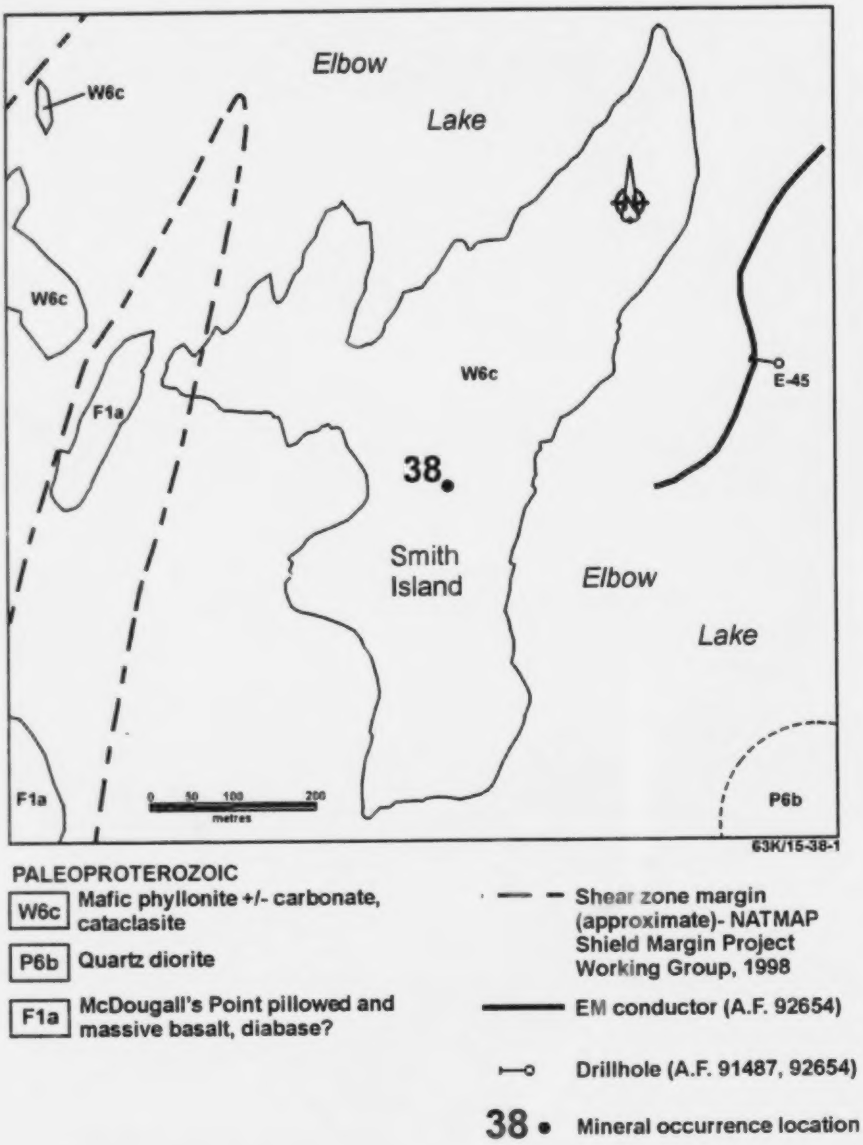
1935: Gold Deposits of the Elbow-Morton Area, Northern Manitoba; Geological Survey of Canada, Memoir 186, 74pp.

Syme, E.C.

1990: Elbow Lake project (part of NTS 63K/15W); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1990, pp.49-57.

1991: Elbow Lake project - Part A: supracrustal rocks and structural setting; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1991, pp.14-27.

1992: Elbow Lake Project - Part A: Supracrustal rocks; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1992, pp.32-46.



Elbow
Lake
W6c
W6c
W6c
F1a
E-45
38
Smith Island
Elbow
Lake
F1a
0 50 100 200
metres
P6b
63K/15-38-1
PALEOPROTEROZOIC
W6c Mafic phyllonite +/- carbonate, cataclasite
P6b Quartz diorite
F1a McDougall's Point pillowed and massive basalt, diabase?
Shear zone margin (approximate)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 92654)
Drillhole (A.F. 91487, 92654)
38 • Mineral occurrence location

Figure 38-1: Geological setting of occurrence 38.

LOCATION: 39

NAME: Gold Shower
UTM: 400320E, 6078935N
AREA: approximately 300 m east of NE side of North Star Lake
ACCESS: via bush plane to North Star Lake, then traverse
AIRPHOTO: MB90034-67

EXPLORATION SUMMARY

The Gold Shower claim was staked in 1928 by Mr Ole Birkeland. In 1934 the claim was held by Canadian Mining Projects, Limited and Mr V.A. Lackner (Stockwell, 1935). In 1981 an airborne EM (INPUT) and magnetic survey was performed for BP Minerals Limited, followed by a geological mapping programme (A.F. 92828).

The vein has been exposed over a strike length of approximately 75 m. Ten trenches were located during the 1992 examination of the occurrence.

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 39-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The occurrence is located in the Eastern zone of Norquay *et al.* (1993). It is dominated by basaltic pillowed flows and fine- to medium-grained mafic intrusions (unit J1d) that are synvolcanic in part (Norquay *et al.*, 1993, 1994a, b; Prouse and Gale, 1993). The mafic volcanic rocks may correlate with the Preaston Formation (Bailes, 1980). The occurrence is located less than 100 m east of Zacks fault, a well defined, discrete regional structure that separates the Eastern from the Central zone assemblage in this area.

The trenches at the occurrence are shown is Fig. 39-2. The host rocks to the occurrence consist of foliated fine- to medium-grained gabbro. Fine-grained mafic volcanic rocks are intercalated with the gabbroic units, the two often showing gradational contacts. The mafic rocks are intruded by a 50 cm thick garnetiferous biotite granite dyke.

MINERALIZATION

The occurrence consists of a white to grey quartz vein up to 4 m thick and trending approximately 008°. The vein has been traced more or less continuously for approximately 75 m. Chloritic inclusions of enclosing wallrock are common. No sulphides were found during the 1992 examination of the property, but Stockwell (1935) indicates minor quantities of pyrite, pyrrhotite and sphalerite are present.

GEOCHEMICAL DATA

No assays were reported for this occurrence. Stockwell (1935) indicates that gold values were disappointingly low.

CLASSIFICATION

Vein type deposit; single vein. Quartz vein and lenses are hosted by gabbro intercalated with basaltic volcanic rocks.

REFERENCES

A.F. 92828; Cancelled Assessment File, Manitoba Industry, Trade and Mines, Minerals Division.

Bailes, A.H.

1980: Geology of the File Lake Area; Manitoba Energy and Mines, Mineral Resources Division, Geological Report 78-1, 134 pp.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Norquay, L.I., Prouse, D.E. and Gale, G.H.

1993: Geological investigations in the North Star Lake area (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1993, pp. 78-83.

1994a: The North Star Lake project (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1994, pp. 83-84.

1994b: North Star Lake (NTS 63K/15SE4); Manitoba Energy and Mines, Minerals Division, Preliminary Map 1994S-3, 1:10 000.

Prouse, D.E. and Gale, G.H.

1993: North Star Lake (NTS 63K/15SE4); Manitoba Energy and Mines, Minerals Division, Preliminary Map 1993S-3, 1:10 000.

Stockwell, C.H.

1935: Gold Deposits of the Elbow-Morton Area, Northern Manitoba; Geological Survey of Canada, Memoir 186, 74pp.

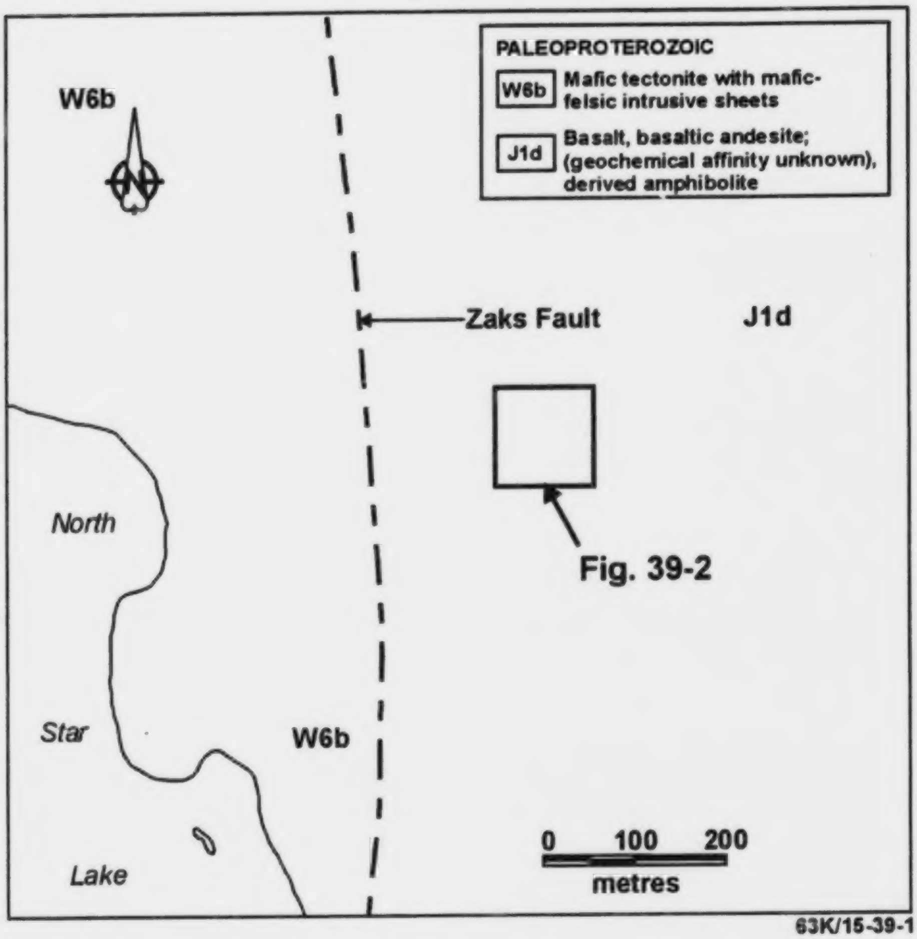

PALEOPROTEROZOIC
W6b
Mafic tectonite with mafic-felsic intrusive sheets
J1d
Basalt, basaltic andesite; (geochemical affinity unknown), derived amphibolite
W6b
Zaks Fault
J1d
Fig. 39-2
North
Star
Lake
W6b
0
100
200
metres
63K/15-39-1

Figure 39-1: Geological setting of Gold Shower occurrence.

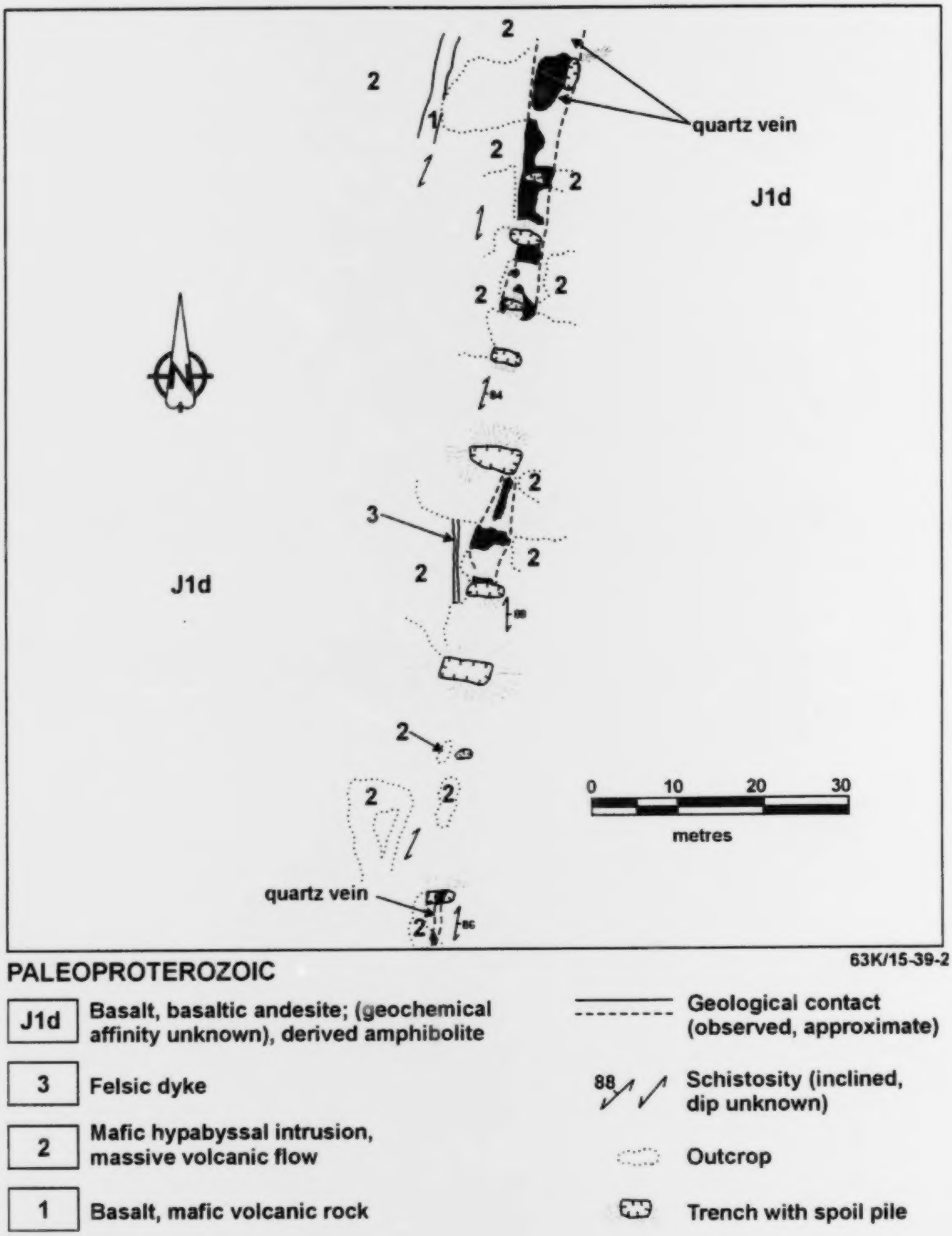

2
2
quartz vein
1
2
2
J1d
2
2
2
3
J1d
2
2
2
0
10
20
30
metres
2
2
quartz vein
2
84
88
86
63K/15-39-2
PALEOPROTEROZOIC
J1d
Basalt, basaltic andesite; (geochemical affinity unknown), derived amphibolite
3
Felsic dyke
2
Mafic hypabyssal intrusion, massive volcanic flow
1
Basalt, mafic volcanic rock
Geological contact (observed, approximate)
88
Schistosity (inclined, dip unknown)
Outcrop
Trench with spoil pile

Figure 39-2: Geology and trench locations at Gold Shower occurrence.

LOCATION: 40

NAME: Gold Rock
UTM: 400490E, 6078725N
AREA: approximately 350 m east of North Star Lake
ACCESS: via bush plane to North Star Lake, then traverse
AIRPHOTO: MB90034-67

EXPLORATION SUMMARY

The Gold Rock claim was staked in 1928 by Mr Ole Birkeland. An option was given to Canadian Mining Projects, Limited in 1934 (Stockwell, 1935). A number of trenches were excavated on the quartz vein system during this period. In 1981 an airborne EM (INPUT) and magnetic survey was performed for BP Minerals Limited, followed by a geological mapping programme (A.F. 92828). In 1993 Mr Lloyd Smith obtained a mining lease that covers this occurrence. He operated the occurrence as a quarry for a short period. Mr Smith was extracting quartz, reportedly containing visible gold, from the central part of the occurrence for ornamental purposes.

Forty-three trenches were located during the examination of the occurrence in 1992. Many are overgrown or flooded and bedrock is only poorly exposed.

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 40-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The occurrence is located in the Eastern zone of Norquay *et al.* (1993, 1994a, b) and Prouse and Gale (1993). The Eastern zone is dominated by basaltic pillowed flows and fine- to medium-grained mafic intrusions (unit J1d) that are synvolcanic in part (Norquay *et al.*, 1993). The mafic volcanic rocks may correlate with the Preaston Formation (Bailes, 1980). The occurrence is located approximately 100 m east of Zaks Fault, a well defined, discrete, regional structure that separates the Eastern from the Central zone assemblage in this area.

The vein on the Gold Rock has been exposed over a strike length of approximately 200 m (Fig. 40-2). The host rocks consist of foliated fine-grained massive and pillowed basalt intercalated with coarser grained gabbroic to dioritic lithologies. Pillows are strongly deformed, typically showing length-to-thickness ratios exceeding 10:1. The mafic rocks are intruded by several 1 m thick mafic feldspar porphyry dykes that trend subparallel to the cleavage of the host rocks.

MINERALIZATION

The occurrence is hosted by a series (?) of milky quartz veins that trend 015° to 020°. Stockwell (1935) indicated the vein system consists of 4 distinct *en échelon* zones. Individual quartz veins vary from several centimetres up to 1.4 m thick, with quartz-impregnated schistose areas attaining thicknesses of up to 2.9 m. Because the vein system is only poorly exposed, it was not possible to determine with certainty if this series of veins represents a single shear-folded vein, similar to that at the North Star No. 1 and 2 occurrence (occurrence 45, this volume).

The veins contain common chloritic inclusions of the enclosing wallrock. In some areas the vein grades into the enclosing wallrock with a gradual decrease in the number of quartz veins. Red feldspar and carbonate are common accessories in the quartz. Pyrite was found as a minor constituent of the veins during the 1992 examination of the property, and Stockwell (1935) indicated that minor quantities of pyrrhotite, chalcopyrite and sphalerite are also present.

GEOCHEMICAL DATA

Stockwell (1935) indicated that Canadian Mining Projects, Limited obtained the following assays:

- one section approximately 17 m (55 ft.) long averaged 14.863 g Au/tonne (0.434 oz. Au/ton) across an average width of 0.95 m (3.12 ft.)
- an adjoining section approximately 52 m (170 ft.) long averaged approximately 39.38 g Au/tonne (1.15 oz. Au/ton) across an average width of 0.36 m (1.17 ft.).

CLASSIFICATION

Vein type deposit; single vein. A single quartz vein appears to have been shear folded, in pillowed basalt and synvolcanic mafic intrusions.

REFERENCES

A.F. 92828; Cancelled Assessment File, Manitoba Industry, Trade and Mines, Minerals Division.

Bailes, A.H.

1980: Geology of the File Lake Area; Manitoba Energy and Mines, Mineral Resources Division, Geological Report 78-1, 134 pp.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Norquay, L.I., Prouse, D.E. and Gale, G.H.

1993: Geological investigations in the North Star Lake area (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1993, pp. 78-83.

1994a: The North Star Lake project (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1994, pp. 83-84.

1994b: North Star Lake (NTS 63K/15SE4); Manitoba Energy and Mines, Minerals Division, Preliminary Map 1994S-3, 1:10 000.

Prouse, D.E. and Gale, G.H.

1993: North Star Lake (NTS 63K/15SE4); Manitoba Energy and Mines, Minerals Division, Preliminary Map 1993S-3, 1:10 000.

Stockwell, C.H.

1935: Gold Deposits of the Elbow-Morton Area, Northern Manitoba; Geological Survey of Canada, Memoir 186, 74pp.

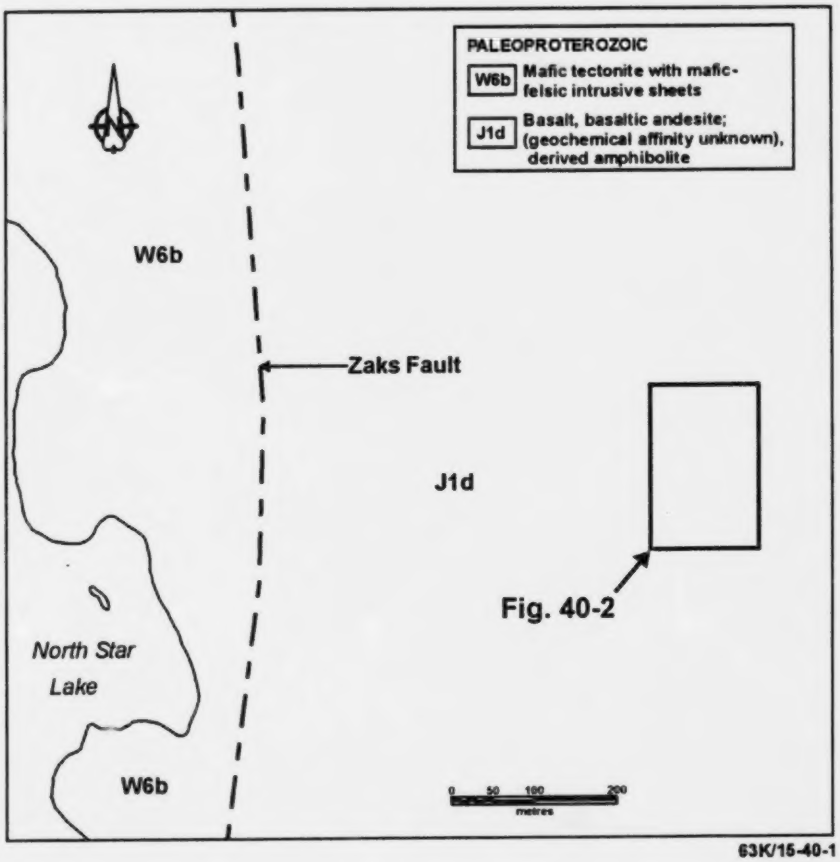

PALEOPROTEROZOIC
W6b Mafic tectonite with mafic-felsic intrusive sheets
J1d Basalt, basaltic andesite; (geochemical affinity unknown), derived amphibolite
W6b
Zaks Fault
J1d
Fig. 40-2
North Star Lake
W6b
0 50 100 200
metres
63K/15-40-1

Figure 40-1: Geological setting of Gold Rock occurrence.

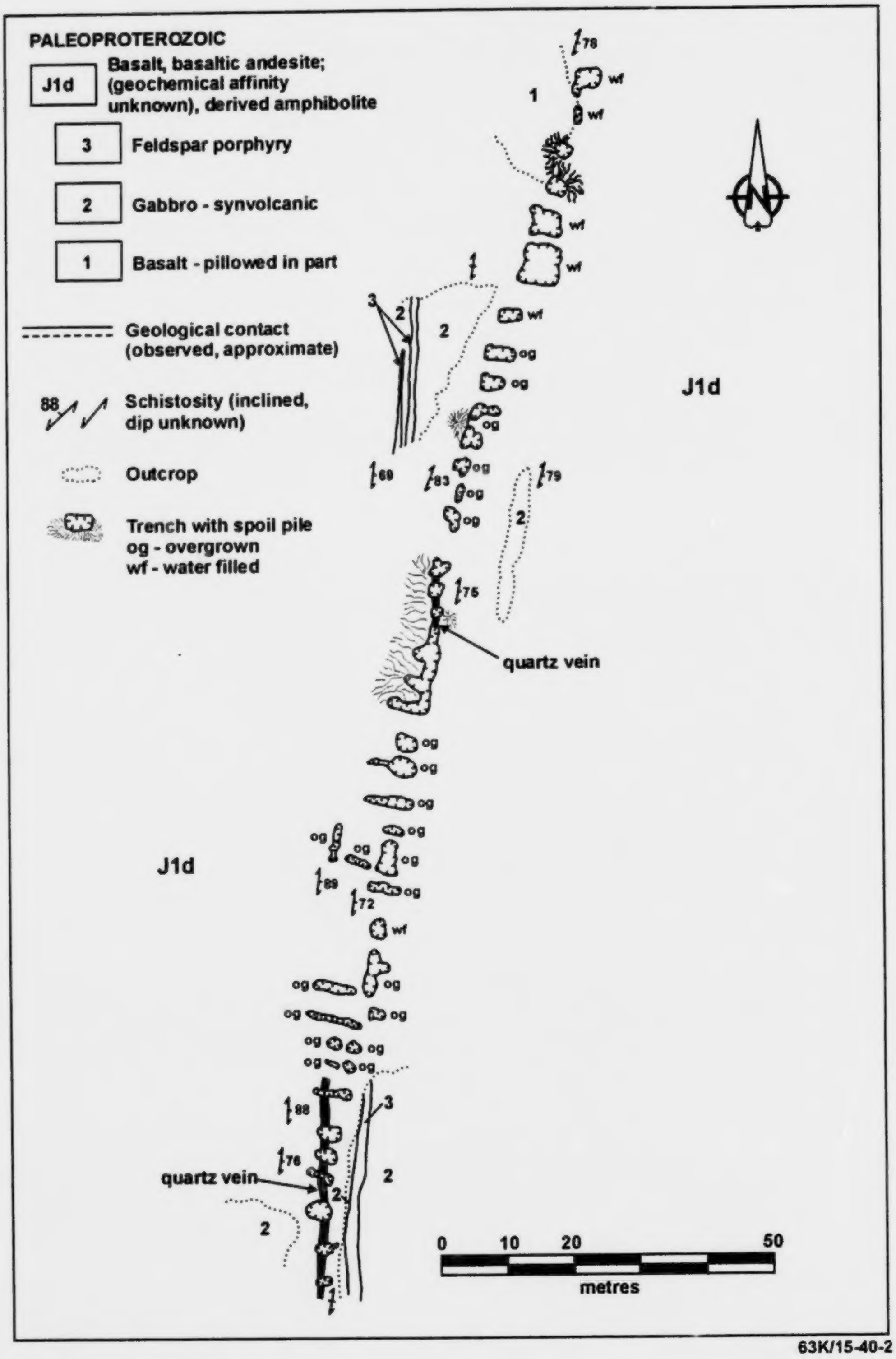

PALEOPROTEROZOIC
J1d
Basalt, basaltic andesite; (geochemical affinity unknown), derived amphibolite
3
Feldspar porphyry
2
Gabbro - synvolcanic
1
Basalt - pillowed in part
Geological contact (observed, approximate)
88
Schistosity (inclined, dip unknown)
Outcrop
Trench with spoil pile
og - overgrown
wf - water filled
78
wf
1
wf
wf
wf
wf
3
2
2
og
og
og
J1d
69
83
og
og
og
79
2
75
quartz vein
og
og
og
og
og
og
og
J1d
89
72
og
wf
og
og
og
og
og
og
og
og
88
3
76
quartz vein
2
2
2
0
10
20
50
metres
63K/15-40-2

Figure 40-2: Geology and trench locations at Gold Rock occurrence.

LOCATION: 41

NAME: Key Fraction
UTM: 400450E, 6078345N
AREA: approximately 400 m east of North Star Lake
ACCESS: via bush plane to North Star Lake, then traverse
AIRPHOTO: MB90027-213

EXPLORATION SUMMARY

This occurrence was staked in 1933 by Mr Oliver Dickson. In 1934 it was owned by Mr Gisli Gislason (Stockwell, 1935). In 1981 an airborne EM (INPUT) and magnetic survey was flown for BP Minerals Limited, followed by a geological mapping programme (A.F. 92828).

Eight trenches were located during the 1993 investigation of this occurrence. Most of these are overgrown and bedrock is exposed only in the central excavations.

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 41-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The occurrence is located in the Eastern zone of Norquay *et al.* (1993, 1994a, b) and Prouse and Gale (1993). The Eastern zone rocks are dominated by basaltic pillowed flows and fine- to medium-grained mafic intrusions (unit J1d) that are synvolcanic in part (Norquay *et al.*, 1993). The mafic volcanic rocks may correlate with the Preaston Formation (Bailes, 1980). The occurrence is located approximately 300 m east of Zaks Fault, a well defined, discrete, regional structure that separates the Eastern from the Central zone assemblage in this area.

The location of the trenches is shown in Fig. 41-2. The rocks at the occurrence consist of foliated, fine-grained, massive and pillowed basalt. Pillows are strongly deformed, typically showing length-to-thickness ratios exceeding 10:1. The basalt is intercalated with coarser grained gabbroic to dioritic lithologies, the two rock types showing both sharp and gradational boundaries.

MINERALIZATION

Stockwell (1935) indicated that the quartz vein that hosts the mineralization is exposed over a strike length of approximately 60 m. The vein is up to 2 m thick, trends approximately 017° and dips 75°E. The vein contains common chloritic inclusions of the enclosing wallrock. Red feldspar and carbonate are minor constituents of the vein. The sulphide content of the vein is low, but some quartz vein material on the spoil piles contains up to 40% pyrite. The sulphide occurs as disseminated grains and masses, and is in part fracture controlled.

GEOCHEMICAL DATA

No assays were reported for this occurrence.

CLASSIFICATION

Vein type deposit; single vein. Quartz vein and lenses are hosted by basalt with intercalated mafic intrusions.

REFERENCES

A.F. 92828, 93722, 93723; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

Bailes, A.H.

1980: Geology of the File Lake Area; Manitoba Energy and Mines, Mineral Resources Division, Geological Report 78-1, 134 pp.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968a; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, Scale 1:100 000.

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1994a: The North Star Lake project (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1994, pp. 83-84.

1994b:North Star Lake (NTS 63K/15SE4); Manitoba Energy and Mines, Minerals Division, Preliminary Map 1994S-3, 1:10 000.

Prouse, D.E. and Gale, G.H.

1993: North Star Lake (NTS 63K/15SE4); Manitoba Energy and Mines, Minerals Division, Preliminary Map 1993S-3, 1:10 000.

Stockwell, C.H.

1935: Gold Deposits of the Elbow-Morton Area, Northern Manitoba; Geological Survey of Canada, Memoir 186, 74pp.

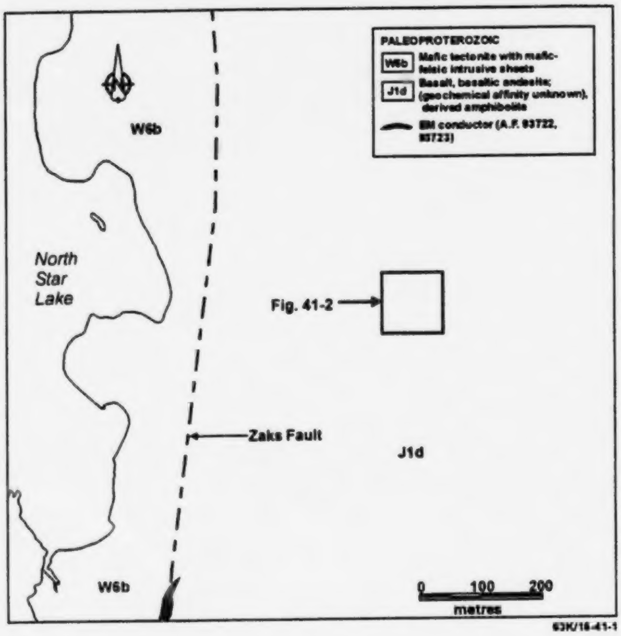

PALEOPROTEROZOIC
W6b
Mafic tectonite with mafic-felsic intrusive sheets
J1d
Basalt, basaltic andesite; (geochemical affinity unknown), derived amphibolite
EM conductor (A.F. 93722, 93723)
W6b
North Star Lake
Fig. 41-2
Zaks Fault
J1d
W6b
0
100
200
metres
63K/15-41-1

Figure 41-1: Geological setting of Key Fraction occurrence.

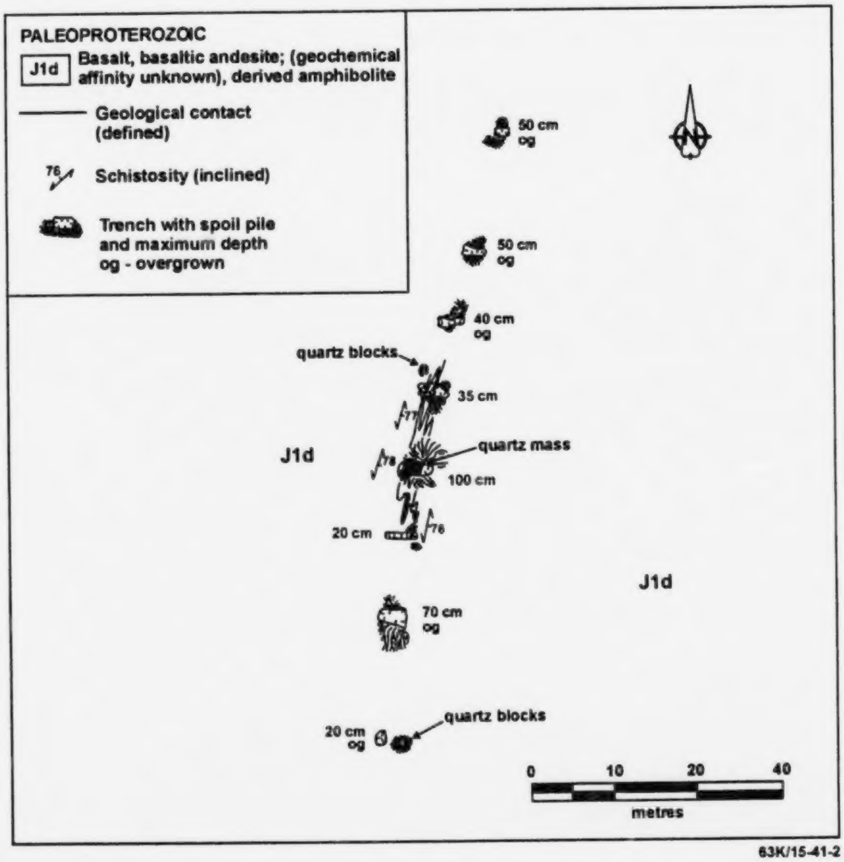

PALEOPROTEROZOIC
J1d
Basalt, basaltic andesite; (geochemical affinity unknown), derived amphibolite
Geological contact (defined)
76
Schistosity (inclined)
Trench with spoil pile and maximum depth
og - overgrown
50 cm og
50 cm og
40 cm og
quartz blocks
35 cm
quartz mass
J1d
100 cm
20 cm
76
J1d
70 cm og
quartz blocks
20 cm og
0
10
20
40
metres
63K/15-41-2

Figure 41-2: Geology and trench locations at Key Fraction occurrence.

LOCATION: 42

NAME: Apex Fraction
UTM: 400670E, 6078225N
AREA: approximately 750 m east of North Star Lake
ACCESS: via bush plane to North Star Lake, then traverse
AIRPHOTO: MB90027-211

EXPLORATION SUMMARY

This occurrence was staked in 1933, and in 1934 was owned by Mr Oliver Dickson (Stockwell, 1935). In 1981 an airborne EM (INPUT) and magnetic survey was flown for BP Minerals Limited, followed by a geological mapping programme (A.F. 92828).

Three trenches were located during the 1993 investigation of this occurrence. Bedrock is exposed in only the northernmost excavation. A fourth trench is located approximately 30 m to the NNW of the main occurrence and was not excavated on the same quartz vein as the other three.

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 42-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The occurrence is located in the Eastern zone of Norquay *et al.* (1993, 1994a, b) and Prouse and Gale (1993). The Eastern zone rocks are dominated by basaltic pillowed flows and fine- to medium-grained mafic intrusions (unit J1d) that are synvolcanic in part (Norquay *et al.*, 1993). The mafic volcanic rocks may correlate with the Preaston Formation (Bailes, 1980). The occurrence is located approximately 500 m east of Zaks Fault, a well defined, discrete, regional structure that separates the Eastern from the Central zone assemblage in this area.

The location of the trenches is shown in Fig. 42-2. The rocks at the occurrence consist of foliated, fine-grained, massive and pillowed basalt. Pillows and amygdules are strongly deformed, typically showing length-to-thickness ratios exceeding 10:1. Top directions of the flows are ambiguous.

MINERALIZATION

A single white, Fe oxide-stained quartz vein up to 60 cm thick is exposed in trench and outcrop at the northern part of the occurrence. The vein trends 022° and dips 82°E. Minor pyrite is disseminated throughout the vein material. Stockwell (1935) indicates that the most southerly trench exposed approximately 4.8 m of mixed quartz and chloritic schist.

GEOCHEMICAL DATA

No assays were reported for this occurrence.

CLASSIFICATION

Vein type deposit; single vein. Quartz vein is hosted by basalt.

REFERENCES

A.F. 92828, 93722, 93723; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

Bailes, A.H.

1980: Geology of the File Lake Area; Manitoba Energy and Mines, Mineral Resources Division, Geological Report 78-1, 134 pp.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Norquay, L.I., Prouse, D.E. and Gale, G.H.

1993: Geological investigations in the North Star Lake area (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1993, pp. 78-83.

1994a: The North Star Lake project (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1994, pp. 83-84.

1994b: North Star Lake (NTS 63K/15SE4); Manitoba Energy and Mines, Minerals Division, Preliminary Map 1994S-3, 1:10 000.

Prouse, D.E. and Gale, G.H.

1993: North Star Lake (NTS 63K/15SE4); Manitoba Energy and Mines, Minerals Division, Preliminary Map 1993S-3, 1:10 000.

Stockwell, C.H.

1935: Gold Deposits of the Elbow-Morton Area, Northern Manitoba; Geological Survey of Canada, Memoir 186, 74pp.

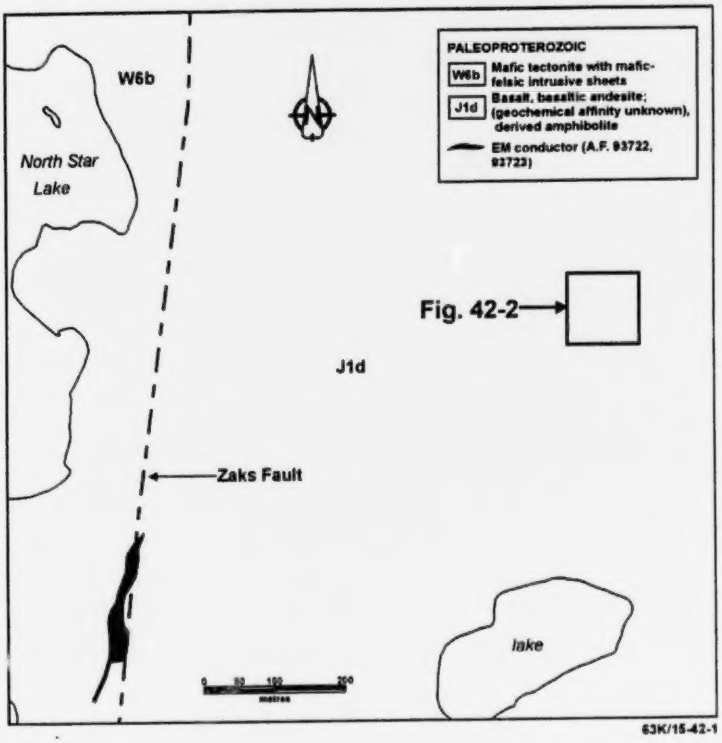

W6b
North Star Lake
PALEOPROTEROZOIC
W6b Mafic tectonite with mafic-felsic intrusive sheets
J1d Basalt, basaltic andesite; (geochemical affinity unknown), derived amphibolite
EM conductor (A.F. 93722, 93723)
Fig. 42-2
J1d
Zaks Fault
lake
0 50 100 200
metres
63K/15-42-1

Figure 42-1: Geological setting of Apex Fraction occurrence.

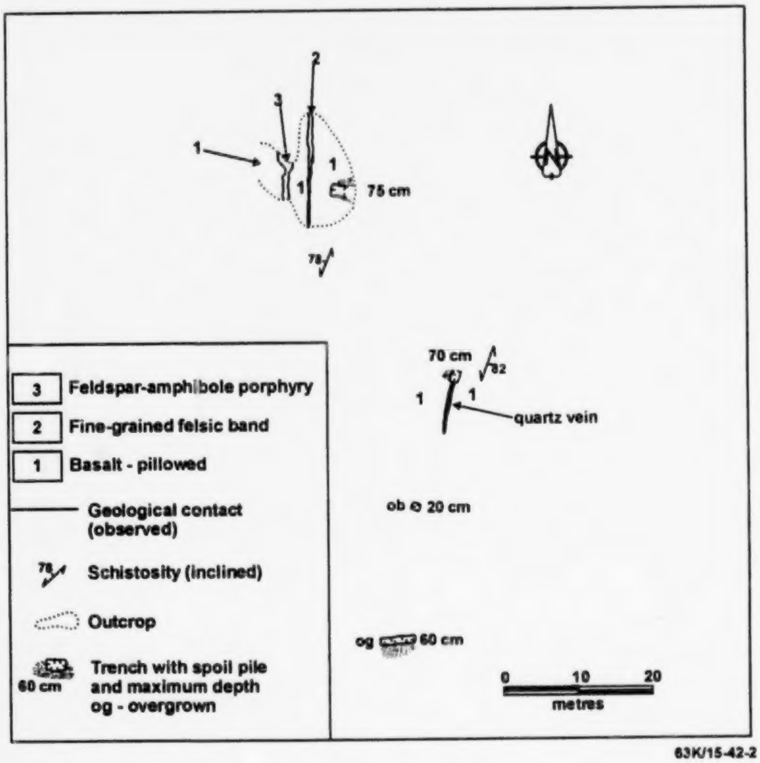

2
3
1
1
1
1
75 cm
78
70 cm
82
1
1
quartz vein
3 Feldspar-amphibole porphyry
2 Fine-grained felsic band
1 Basalt - pillowed
Geological contact (observed)
78 Schistosity (inclined)
Outcrop
60 cm Trench with spoil pile and maximum depth
og - overgrown
ob ø 20 cm
og 60 cm
0 10 20
metres
63K/15-42-2

Figure 42-2: Geology and trench locations at Apex Fraction occurrence.

LOCATION: 43

NAME: North Star No. 2 and No. 4
UTM: 400350E, 6077735N
AREA: approximately 400 m SE of southeast side of North Star Lake
ACCESS: via bush plane to North Star Lake, then traverse
AIRPHOTO: MB90027-211

EXPLORATION SUMMARY

The North Star No. 4 claim was staked in 1927 by Mr Hjalmer Peterson (Stockwell, 1935) and several trenches excavated. In 1981 an airborne EM (INPUT) and magnetic survey was for BP Minerals Limited, followed by a geological mapping programme (A.F. 92828).

Quartz veins occur in three areas at this occurrence. The easternmost occurrence has been explored in 5 trenches, the northern quartz vein in 2 trenches, and the western occurrence in 17 excavations. Most of the trenches are completely overgrown and/or water-filled, and bedrock is generally only poorly exposed.

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 43-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The occurrence is located in the Eastern zone of Norquay *et al.* (1993, 1994a, b) and Prouse and Gale (1993). The Eastern zone rocks are dominated by basaltic pillowed flows and fine- to medium-grained mafic intrusions (unit J1d) that are synvolcanic in part (Norquay *et al.*, 1993). The mafic volcanic rocks may correlate with the Preaston Formation (Bailes, 1980). The occurrence is located approximately 150 m east of Zaks Fault, a well defined, discrete, regional structure that separates the Eastern from the Central zone assemblage in this area.

The locations of two groups of trenches is shown in Fig. 43-2 and 43-3. The lithologic sequence at the occurrence consists of foliated fine-grained massive and pillowed basalt, flow-top breccia, finely laminated mafic rock, and coarser grained gabbroic to dioritic lithologies. Contacts between rock types are often gradational suggesting that the lithologies represent a flow sequence. Pillows are strongly deformed, typically showing length-to-thickness ratios exceeding 10:1. Top directions of the flows are ambiguous. Feldspar porphyry dykes that trend parallel to the regional foliation are also present.

MINERALIZATION

The North Star No. 4, the easternmost occurrence (Fig. 43-3), corresponds to locality 43b of Stockwell (1935), and is more or less on strike with the Key Fraction occurrence approximately 275 m to the north. The quartz vein is exposed in the two northern trenches and pinches out to the south. The vein is up to 160 cm thick, strikes 019° and has a subvertical dip. It consists of white quartz and contains up to 2% brown-weathering Fe-carbonate. Chloritic wallrock fragments are common inclusions within the vein, which also contains minor disseminated pyrite. The location of the vein appears to be controlled by a feldspar porphyry dyke, and is located within and at the margins of this intrusion.

The North Star No. 2 and No. 4, approximately 120 m WNW of the North Star No. 4 occurrence (Fig. 43-2), is more or less on strike with the North Star No. 1 and No. 2 occurrence 350 m to the SSW. It corresponds to locality 43c of Stockwell (1935). The character of the quartz veins ranges from discrete features up to 1.6 m thick to areas of chloritic schist that contain abundant quartz stringers. Most of the quartz veins observed in the trenched areas are less than 20 cm thick. Disseminated sulphides form a minor constituent of the veins. Pyrite is the most common sulphide, and chalcopyrite was observed in several areas. Stockwell (1935) indicated that pyrrhotite and sphalerite are present as minor constituents.

The North Star No. 2 occurs approximately 100 m NNE of the north end of the trenches on the North Star No. 1 and No. 4 part of the occurrence. A white quartz vein 5 to 20 cm thick, trending 004° and dipping 84°E, is exposed in one trench. The vein pinches and swells along strike. The quartz contains common minor disseminated chalcopyrite and trace amounts of pyrite, and is very limonitic.

GEOCHEMICAL DATA

No assays were reported for this occurrence.

CLASSIFICATION

Vein-type deposit; multiple veins and lenses.

REFERENCES

A.F. 90493, 92828, 93722; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

Bailes, A.H.

1980: Geology of the File Lake Area; Manitoba Energy and Mines, Mineral Resources Division, Geological Report 78-1, 134 pp.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Norquay, L.I., Prouse, D.E. and Gale, G.H.

1993: Geological investigations in the North Star Lake area (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1993, pp. 78-83.

1994a: The North Star Lake project (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1994, pp. 83-84.

1994b: North Star Lake (NTS 63K/15SE4); Cancelled Assessment File, Manitoba Industry, Trade and Mines, Minerals Division, Preliminary Map 1994S-3, 1:10 000.

Prouse, D.E. and Gale, G.H.

1993: North Star Lake (NTS 63K/15SE4); Manitoba Energy and Mines, Minerals Division, Preliminary Map 1993S-3, 1:10 000.

Stockwell, C.H.

1935: Gold Deposits of the Elbow-Morton Area, Northern Manitoba; Geological Survey of Canada, Memoir 186, 74pp.

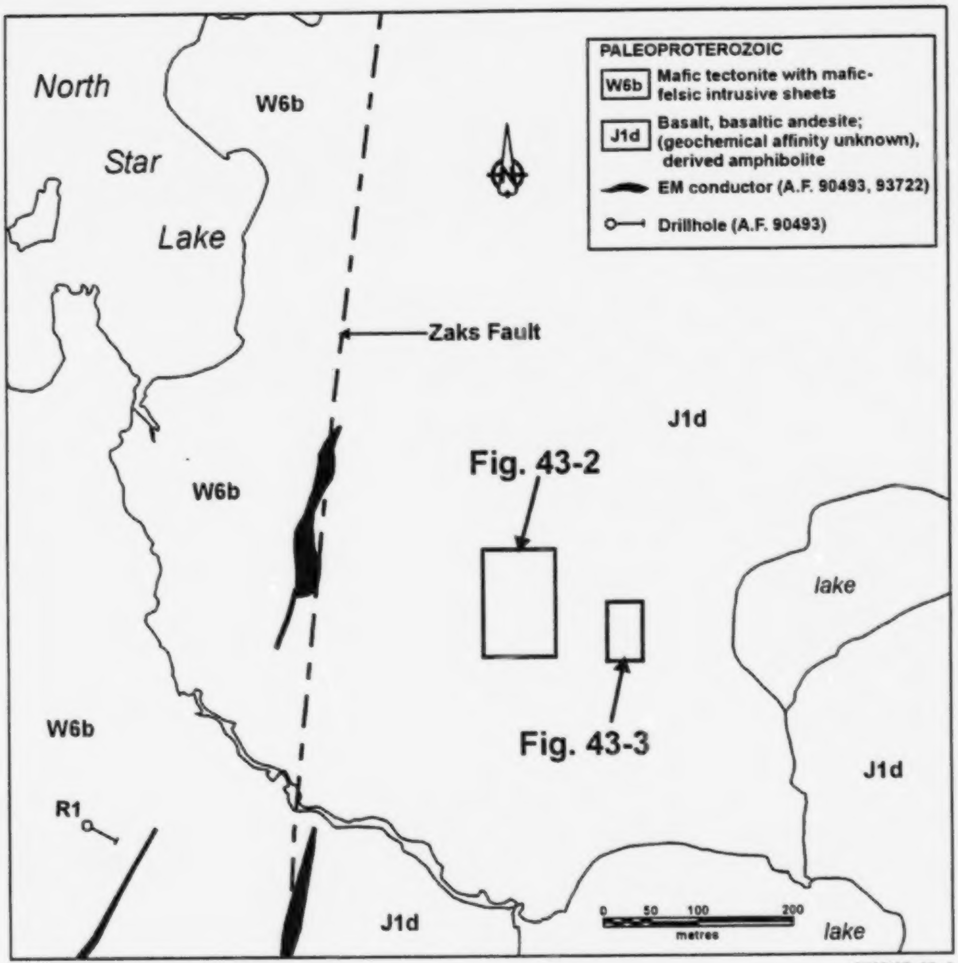
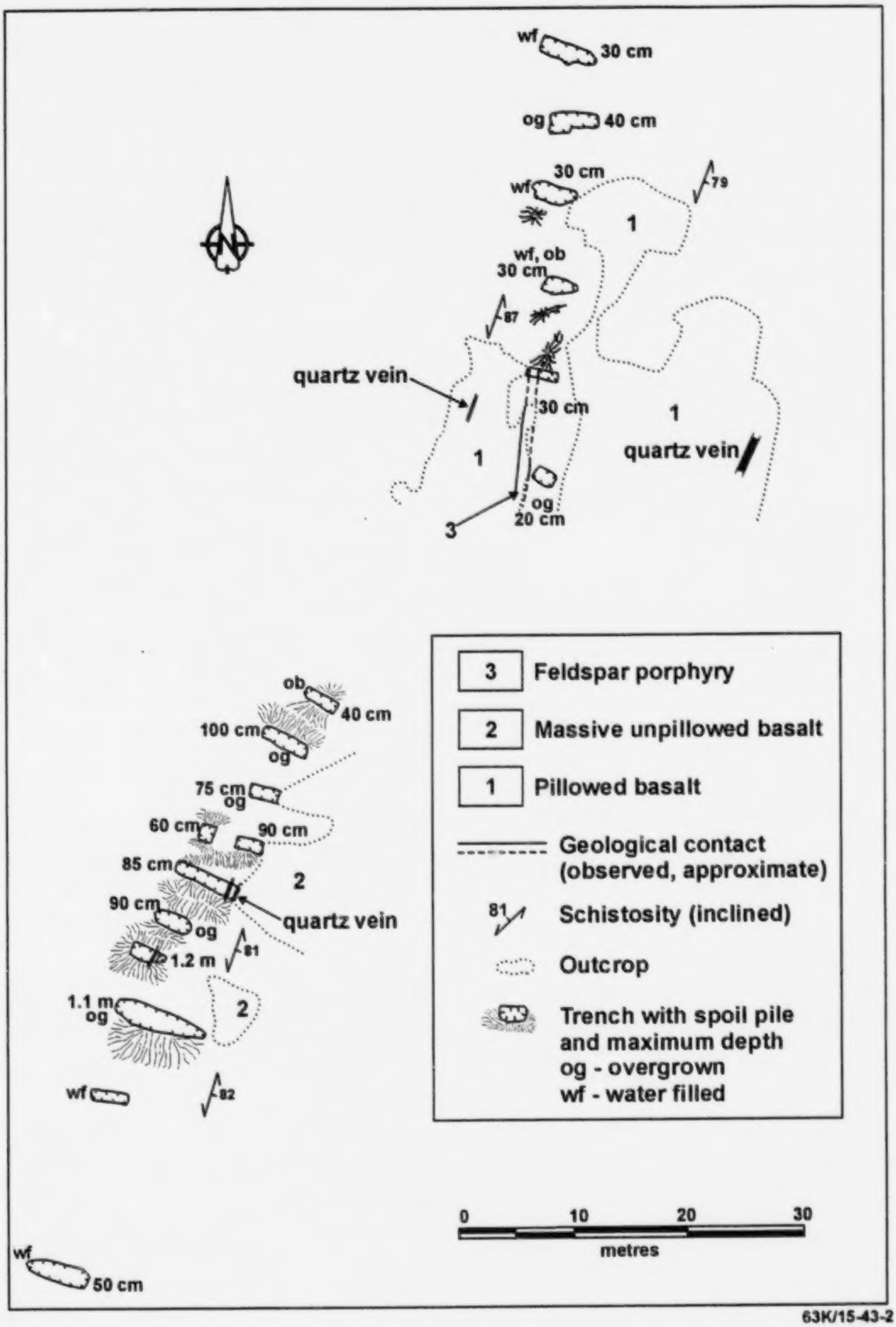
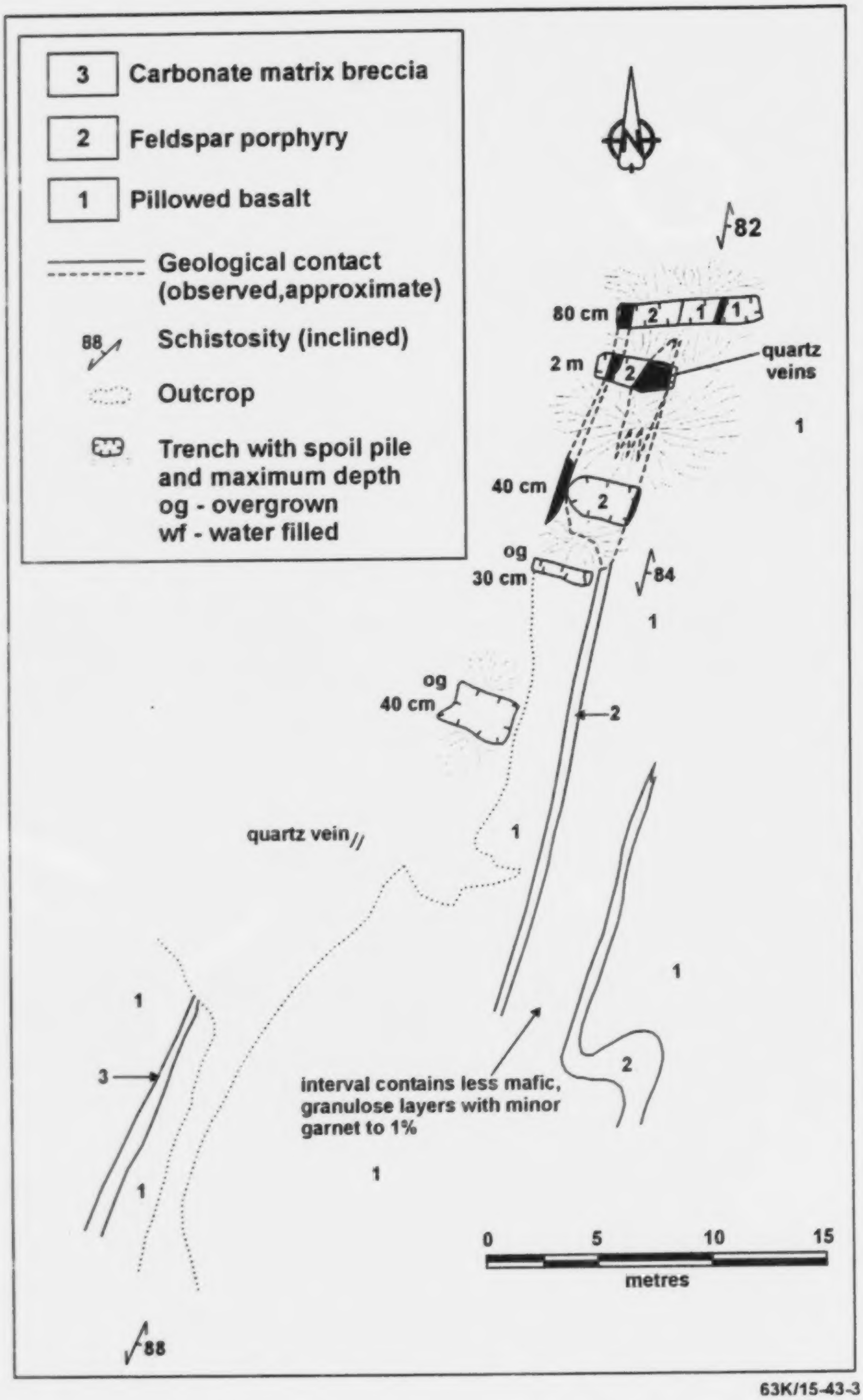

North Star Lake
W6b
W6b
W6b
Zaks Fault
J1d
J1d
J1d
Fig. 43-2
Fig. 43-3
lake
lake
R1
PALEOPROTEROZOIC
W6b Mafic tectonite with mafic-felsic intrusive sheets
J1d Basalt, basaltic andesite; (geochemical affinity unknown), derived amphibolite
EM conductor (A.F. 90493, 93722)
Drillhole (A.F. 90493)
0 50 100 200
metres
63K/15-43-1

Figure 43-1: Geological setting of North Star No. 2 and No. 4 occurrence.


wf
30 cm
og
40 cm
30 cm
wf
79
1
wf, ob
30 cm
87
quartz vein
30 cm
1
1
quartz vein
3
og
20 cm
ob
40 cm
100 cm
og
75 cm
og
60 cm
90 cm
85 cm
2
quartz vein
90 cm
og
81
1.2 m
1.1 m
og
2
wf
82
wf
50 cm
3 Feldspar porphyry
2 Massive unpillowed basalt
1 Pillowed basalt
Geological contact (observed, approximate)
81 Schistosity (inclined)
Outcrop
Trench with spoil pile and maximum depth
og - overgrown
wf - water filled
0
10
20
30
metres

63K/15-43-2

Figure 43-2: Geology and trench locations at North Star No. 2 and No. 4 occurrence.


3 Carbonate matrix breccia
2 Feldspar porphyry
1 Pillowed basalt
Geological contact (observed,approximate)
88 Schistosity (inclined)
Outcrop
Trench with spoil pile and maximum depth
og - overgrown
wf - water filled
N
82
80 cm
2 m
quartz veins
40 cm
og
30 cm
84
og
40 cm
2
quartz vein
1
3
interval contains less mafic, granulose layers with minor garnet to 1%
0 5 10 15
metres
88

63K/15-43-3

Figure 43-3: Geology and trench locations at North Star No. 2 and No. 4 occurrence.

LOCATION: 44

NAME: North Star No. 7
UTM: 400670E, 6077565N
AREA: approximately 800 m SE of southeast end of North Star Lake
ACCESS: via bush plane to North Star Lake, then traverse
AIRPHOTO: MB90027-211

EXPLORATION SUMMARY

The occurrence was staked in 1927, and several trenches excavated to evaluate a quartz vein (Stockwell, 1935). In 1981 an airborne EM (INPUT) and magnetic survey was flown for BP Minerals Limited, followed by a geological mapping programme (A.F. 92828).

A single, mostly-overgrown trench and stripped area were located during the 1992 examination of the occurrence.

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 44-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The occurrence is located in the Eastern zone of Norquay *et al.* (1993, 1994a, b) and Prouse and Gale (1993). The Eastern zone rocks are dominated by basaltic pillowed flows and fine- to medium-grained mafic intrusions (unit J1d) that are synvolcanic in part (Norquay *et al.*, 1993). The mafic volcanic rocks may correlate with the Preaston Formation (Bailes, 1980). The occurrence is located approximately 700 m east of Zaks Fault, a well defined, discrete, regional structure that separates the Eastern from the Central zone assemblage in this area.

The occurrence is underlain by basalt and synvolcanic dioritic to gabbroic intrusions. A granitic dyke trending 025° is exposed approximately 30 m east of the south end of the occurrence.

MINERALIZATION

Stockwell (1935) indicated the occurrence had been traced along strike for approximately 75 m. Quartz veins and quartz in schist occur across thicknesses ranging from 1.5 to 5.5 m, with individual quartz veins from 1.0 to 1.8 m thick. The veins and schistose interval trends 015° and dips steeply to the east. The quartz is generally fairly limonitic on the weathered surface and contains minor disseminated pyrite.

GEOCHEMICAL DATA

No assay values have been reported for this occurrence.

CLASSIFICATION

Vein type deposit; single vein.

REFERENCES

A.F. 92828, 93722, 93723; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

Bailes, A.H.

1980: Geology of the File Lake Area; Manitoba Energy and Mines, Mineral Resources Division, Geological Report 78-1, 134 pp.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Norquay, L.I., Prouse, D.E. and Gale, G.H.

1993: Geological investigations in the North Star Lake area (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1993, pp. 78-83.

1994a:The North Star Lake project (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1994, pp. 83-84.

1994b: North Star Lake (NTS 63K/15SE4); Manitoba Energy and Mines, Minerals Division, Preliminary Map 1994S-3, 1:10 000.

Prouse, D.E. and Gale, G.H.

1993: North Star Lake (NTS 63K/15SE4); Manitoba Energy and Mines, Minerals Division, Preliminary Map 1993S-3, 1:10 000.

Stockwell, C.H.

1935: Gold Deposits of the Elbow-Morton Area, Northern Manitoba; Geological Survey of Canada, Memoir 186, 74pp.

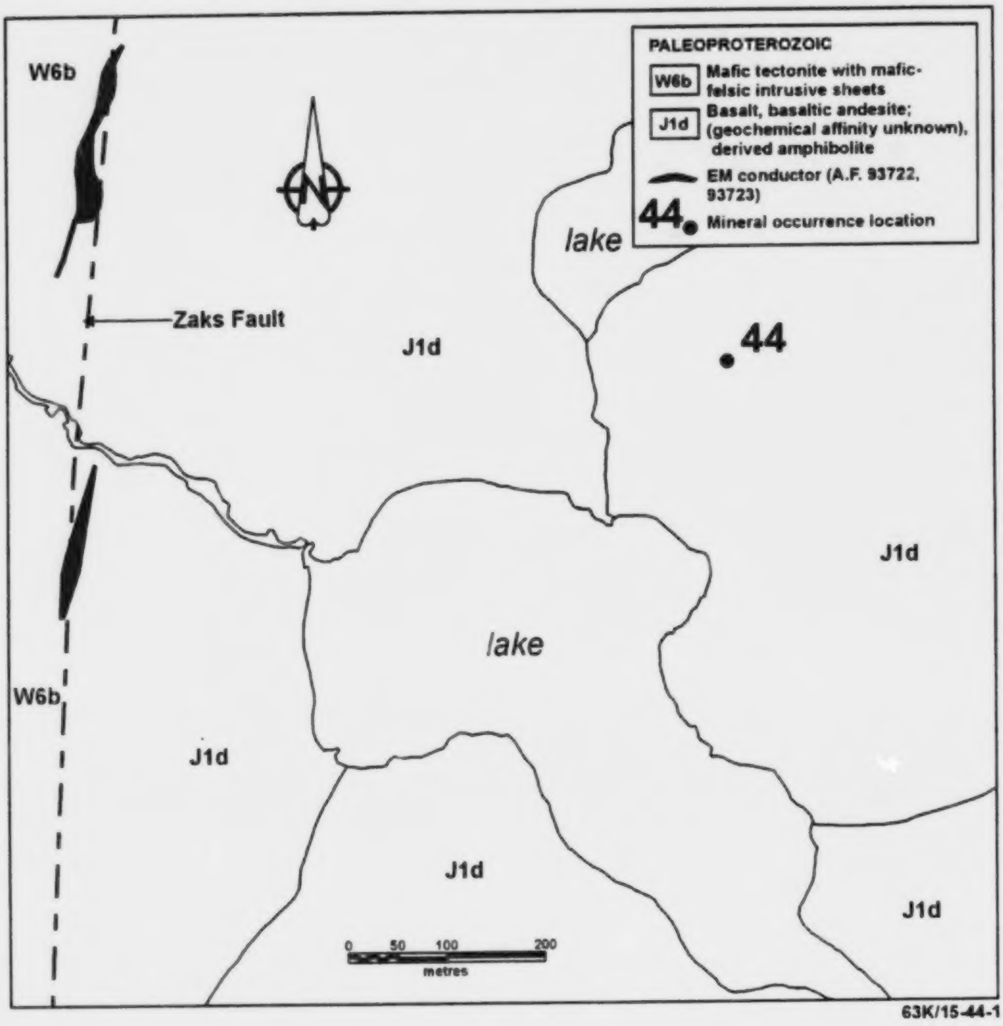

PALEOPROTEROZOIC
W6b
Mafic tectonite with mafic-felsic intrusive sheets
J1d
Basalt, basaltic andesite; (geochemical affinity unknown), derived amphibolite
EM conductor (A.F. 93722, 93723)
44
Mineral occurrence location
W6b
Zaks Fault
J1d
lake
44
J1d
lake
W6b
J1d
J1d
J1d
0
50
100
200
metres
63K/15-44-1

Figure 44-1: Geological setting of North Star No. 7 occurrence.

LOCATION: 45

NAME: North Star No. 1 and No. 2
UTM: 400080E, 6077425N
AREA: along south side of stream approximately 500 m SE of southeast side of North Star Lake
ACCESS: via bush plane to North Star Lake, then traverse
AIRPHOTO: MB90034-69

EXPLORATION SUMMARY

The claim was staked in 1927 and in 1934 was owned by Messrs Lambert Nelson and George M. Solberg. Canadian Mining Projects, Ltd. collected a suite of samples and published the assay results. In 1933 Canadian Minerals, Limited obtained a 230 kg (500 lb.) bulk (?) sample for testing (Stockwell, 1935). In 1981 an airborne EM (INPUT) and magnetic survey was flown for BP Minerals Limited, followed by a geological mapping programme (A.F. 92828). Hudson Bay Exploration and Development Company, Ltd. did an HLEM (MaxMin II) survey over the area in 1980, and some of the conductive responses and extension of the North Star No. 1 and No. 2 vein systems were drill tested in 1983 and 1984 (A.F. 93723 and 93722).

More than 75 trenches, now mostly caved and overgrown, and a shaft of unknown depth are located at the occurrence.

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 45-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The occurrence is located in the Eastern basalts of Norquay *et al.* (1993, 1994a, b) and Prouse and Gale (1993). The Eastern zone rocks are dominated by basaltic pillowed flows and fine- to medium-grained mafic intrusions (unit J1d) that are synvolcanic in part (Norquay *et al.*, 1993). The mafic volcanic rocks may correlate with the Preaston Formation (Bailes, 1980). The occurrence is located approximately 100 m east of Zaks Fault, a well defined, discrete, regional structure that separates the Eastern from the Central zone assemblage in this area.

The rocks at the occurrence (Fig. 45-2, 45-3 and 45-4) are dominated by massive and strongly flattened pillowed basalts and massive gabbroic rocks that are probably intrusive equivalents to the volcanic flows. Finely laminated intervals are present, but it is unclear if these are a result of shear deformation or represent mafic tuffaceous layers.

The volcanic rocks and veins are cut by mafic feldspar porphyry and granitic biotite-phyric dykes. The granitic dyke forms an irregular unit with a complex geometry. It is unclear if the distribution of this unit is a result of structural modification of a once linear intrusion or reflects its primary mode of emplacement. Lack of a strong foliation within this unit would suggest the latter case. A NNE-trending mafic feldspar porphyry dyke up to 1 m thick cuts the eastern quartz vein system at a shallow angle. It contains fragments of vein material.

MINERALIZATION

The mineralization at this occurrence is hosted by a series of quartz veins that occur in schistose intervals of the mafic volcanic sequence. The schistose zones tend to occur in the fine-grained, massive, mafic lithology that appears to represent massive basaltic flow units or their hypabyssal equivalents. The size and character of the quartz veins show a high degree of variability along strike, ranging from discrete well defined quartz veins >3 m thick and containing few wallrock inclusions, to intervals containing various proportions of quartz stringers and veinlets, and chloritic schist. The change in character along strike is rapid. A well defined quartz vein exposed in one trench wall can be represented by a quartz-chlorite schist interval containing relatively little quartz in the opposite wall. Some of the veins show a marked thickening along strike. This is at least partially due to shear folding parallel to the strike of the vein. The Z-asymmetry of one of these folds can be observed in one group of trenches.

Based on its appearance and texture, more than one generation of quartz is present, but it is unclear what generation(s) hosts the mineralization. Pyrite occurs as a minor disseminated constituent in the quartz veins, in some areas comprising up to 1% of the vein material. Light brown weathering carbonate is a common minor constituent of the veins. Stockwell (1935) indicated chalcopyrite, sphalerite, pyrrhotite, arsenopyrite and native gold occur as minor constituents in the quartz. Petrographic investigations revealed the gold is paragenetically associated with the chalcopyrite and sphalerite.

GEOCHEMICAL DATA

Stockwell (1935) indicated that Canadian Mining Projects, Limited obtained the following assays over a distance of 116 m (380 ft.) along the eastern part of the occurrence:

8 trenches returned values of less than 1.71 g Au/t (0.05 oz. Au/ton)

13 samples returned 3.42 to 6.85 g Au/t (0.10 to 0.20 oz. Au/ton) across widths ranging from 0.8 to 1.5 m (2.5 to 5.0 ft.)

5.719 g Au/t (0.167 oz. Au/ton) across 9 m (30 ft.)

11 samples returned 6.85 to 13.70 g Au/t (0.20 to 0.40 oz. Au/ton) across widths ranging from 0.85 to 2.07 m (2.8 to 6.8 ft.)

12 samples returned 17.12 to 37.33 g Au/t (0.50 to 1.09 oz. Au/ton) across widths ranging from 0.2 to 4.0 m (0.5 to 13.0 ft.)

47.95 g Au/t (1.4 oz. Au/ton) across 1.5 m (5 ft.)

106.51 g Au/t (3.11 oz Au/ton) across 0.12 m (0.4 ft.)

The sample collected by Canadian Minerals, Limited returned 19.52 g Au/t (0.57 oz. Au/ton), and contained small quantities of silver, zinc and copper (Stockwell, 1935).

Metal values obtained by Hudson Bay Exploration and Development from their 1983 (hole STA-8; A.F. 93723) and 1984 programmes (holes STA-14, -15; A.F. 93722) returned mostly low metal values over narrow widths: 0.01% Cu, .01% Zn, 0.34 g Au/t (0.01 oz. Au/ton), 0.34 g Ag/t (0.01 oz. Ag/ton). Hole STA-16 intersected 4.11 g Au/t (0.12 oz Au/ton) between 86.5-86.8 m (283.9-284.8 ft.). Visible gold was noted in hole STA-8 at 96.0 m (314.9 ft.) and 118.9 m (390.2 ft.). Hole STA-17 intersected several auriferous intervals, the best returning 5.82 g Au/t (0.17 oz. Au/ton) from 75.3-75.6 m (247.0-248.0 ft.). Visible gold was noted between 71.6-71.9 m (234.8-236.0 ft.), but the assay returned only 2.74 g Au/t (0.08 oz. Au/ton).

CLASSIFICATION

Vein-type deposit; multiple veins and lenses.

REFERENCES

A.F. 92828, 93722 and 93723; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

Bailes, A.H.

1980: Geology of the File Lake Area; Manitoba Energy and Mines, Mineral Resources Division, Geological Report 78-1, 134 pp.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Norquay, L.I., Prouse, D.E. and Gale, G.H.

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1994b: North Star Lake (NTS 63K/15SE4); Manitoba Energy and Mines, Minerals Division, Preliminary Map 1994S-3, 1:10 000.

Prouse, D.E. and Gale, G.H.

1993: North Star Lake (NTS 63K/15SE4); Manitoba Energy and Mines, Minerals Division, Preliminary Map 1993S-3, 1:10 000.

Stockwell, C.H.

1935: Gold Deposits of the Elbow-Morton Area, Northern Manitoba; Geological Survey of Canada, Memoir 186, 74pp.

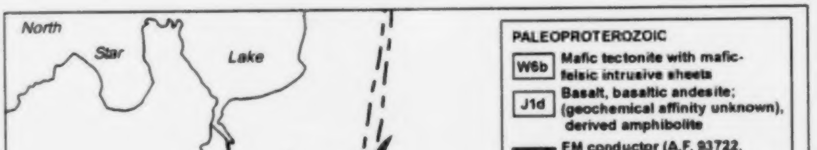
North
Star
Lake
PALEOPROTEROZOIC
W6b
Mafic tectonite with mafic-felsic intrusive sheets
J1d
Basalt, basaltic andesite; (geochemical affinity unknown), derived amphibolite
EM conductor (A.F. 93722, 93723)
Drillhole (A.F. 90493)
W6b
J1d
lake
Zaks Fault
Fig. 45-2
RAY-1
Fig. 45-3
lake
W6b
Fig. 45-4
0 50 100
metres
J1d
63k-15-45-1

Figure 45-1: Geological setting of North Star No. 1 and No. 2 occurrence.

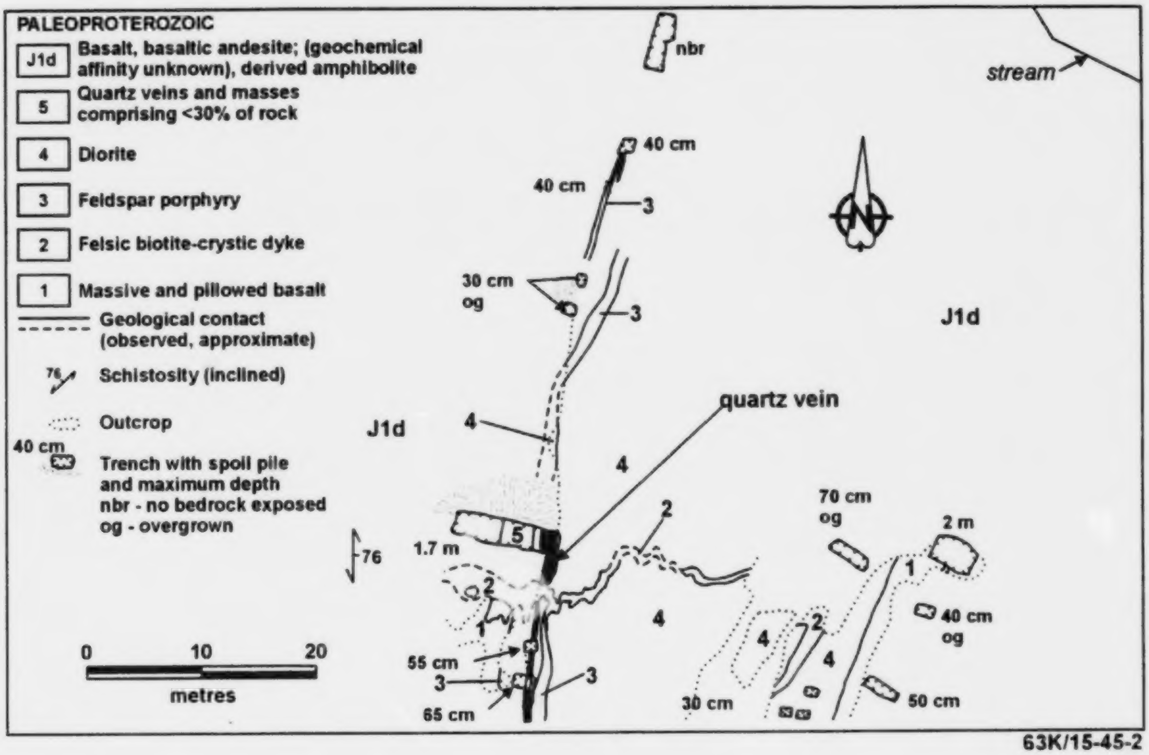
PALEOPROTEROZOIC
J1d Basalt, basaltic andesite; (geochemical affinity unknown), derived amphibolite
5 Quartz veins and masses comprising <30% of rock
4 Diorite
3 Feldspar porphyry
2 Felsic biotite-crystic dyke
1 Massive and pillowed basalt
Geological contact (observed, approximate)
76 Schistosity (inclined)
Outcrop
40 cm
Trench with spoil pile and maximum depth
nbr - no bedrock exposed
og - overgrown
0
10
20
metres
nbr
stream
40 cm
40 cm
3
30 cm
og
3
J1d
J1d
quartz vein
4
4
76
1.7 m
5
2
2
1
4
70 cm
og
2 m
1
40 cm
og
4
2
4
55 cm
3
3
65 cm
30 cm
50 cm
63K/15-45-2

Figure 45-2: Geology and trench locations at North Star No. 1 and No. 2 occurrence.

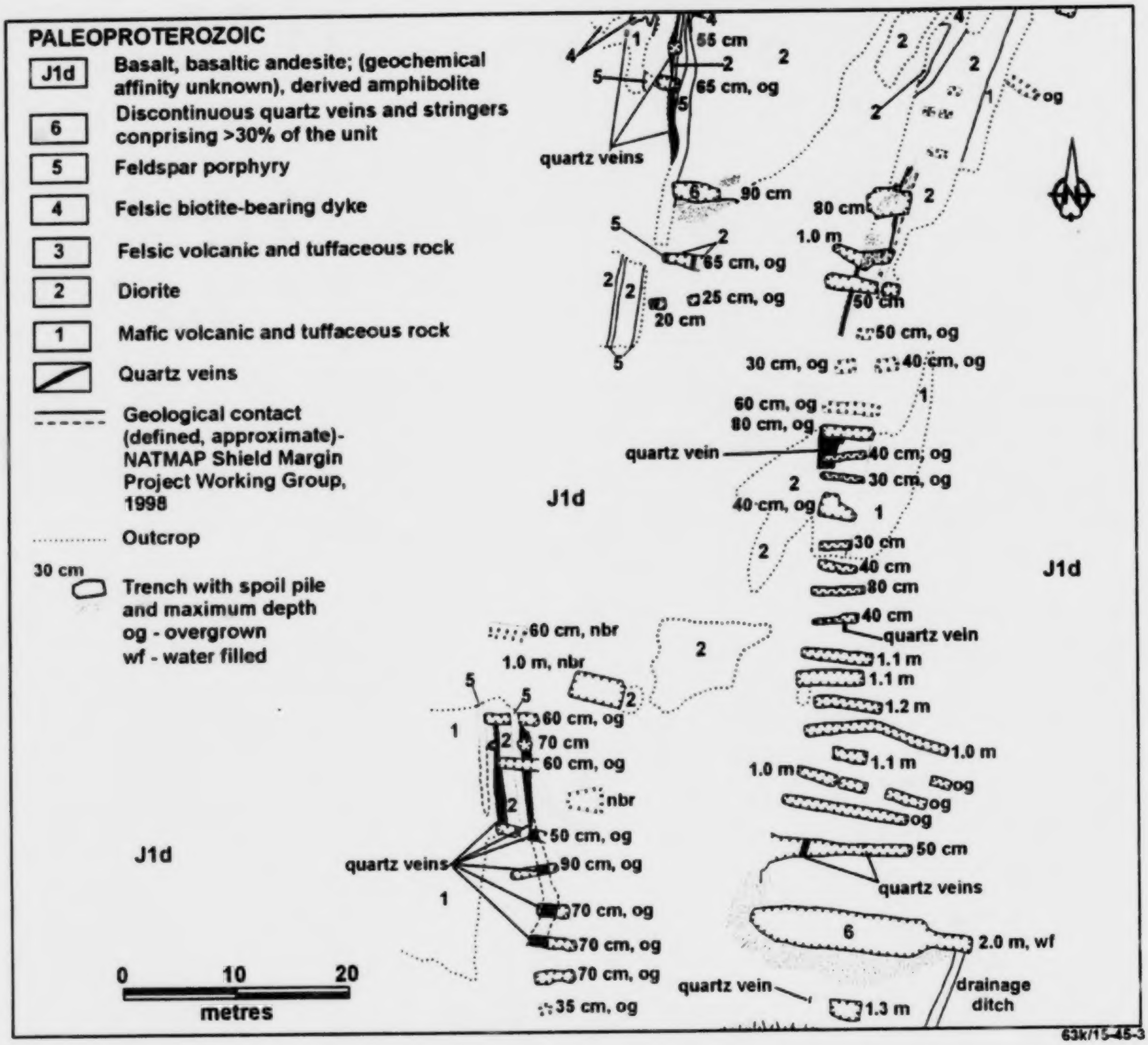
PALEOPROTEROZOIC
J1d Basalt, basaltic andesite; (geochemical affinity unknown), derived amphibolite
6 Discontinuous quartz veins and stringers comprising >30% of the unit
5 Feldspar porphyry
4 Felsic biotite-bearing dyke
3 Felsic volcanic and tuffaceous rock
2 Diorite
1 Mafic volcanic and tuffaceous rock
Quartz veins
Geological contact (defined, approximate)- NATMAP Shield Margin Project Working Group, 1998
Outcrop
30 cm Trench with spoil pile and maximum depth
og - overgrown
wf - water filled
0 10 20
metres
quartz veins
65 cm
65 cm, og
90 cm
80 cm
1.0 m
65 cm, og
25 cm, og
20 cm
50 cm
50 cm, og
30 cm, og
40 cm, og
60 cm, og
80 cm, og
quartz vein
40 cm, og
30 cm, og
J1d
40 cm, og
30 cm
40 cm
80 cm
J1d
40 cm
quartz vein
60 cm, nbr
1.0 m, nbr
1.1 m
1.1 m
1.2 m
60 cm, og
70 cm
60 cm, og
1.0 m
1.1 m
1.0 m
og
og
og
nbr
50 cm, og
J1d
quartz veins
90 cm, og
50 cm
quartz veins
70 cm, og
70 cm, og
2.0 m, wf
70 cm, og
quartz vein
drainage ditch
35 cm, og
1.3 m
63k/15-45-3

Figure 45-3: Geology and trench locations at North Star No. 1 and No. 2 occurrence.

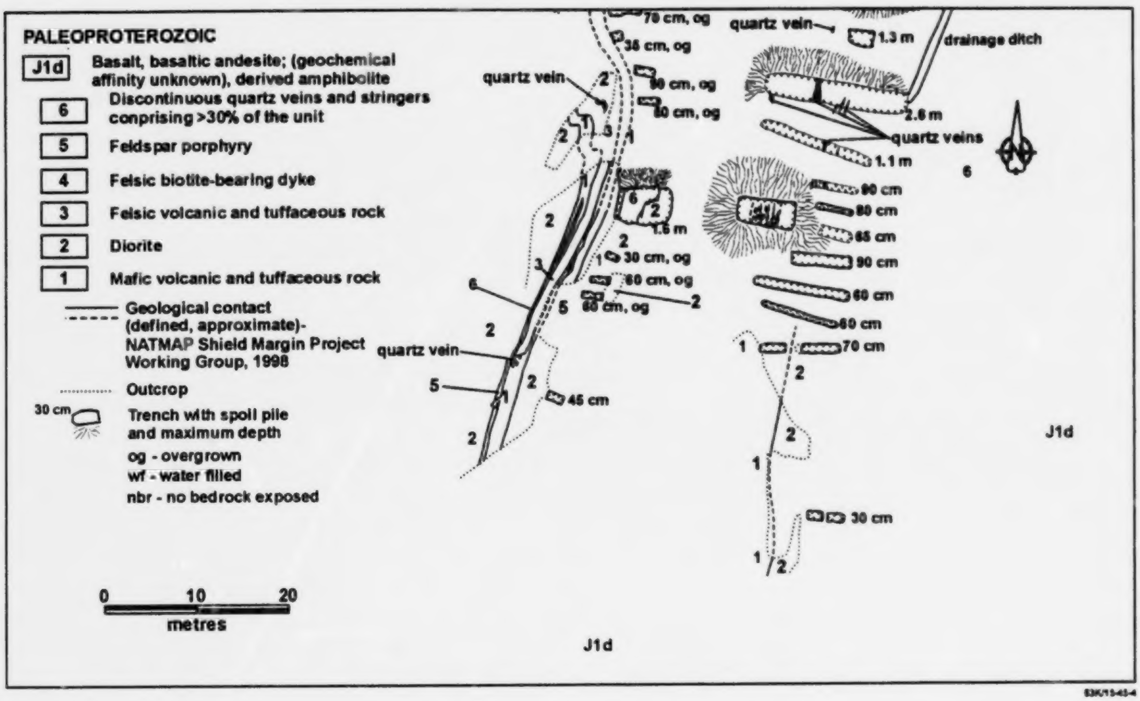
PALEOPROTEROZOIC
J1d Basalt, basaltic andesite; (geochemical affinity unknown), derived amphibolite
6 Discontinuous quartz veins and stringers conprising >30% of the unit
5 Feldspar porphyry
4 Felsic biotite-bearing dyke
3 Felsic volcanic and tuffaceous rock
2 Diorite
1 Mafic volcanic and tuffaceous rock
Geological contact (defined, approximate)- NATMAP Shield Margin Project Working Group, 1998
Outcrop
30 cm
Trench with spoil pile and maximum depth
og - overgrown
wf - water filled
nbr - no bedrock exposed
0
10
20
metres
J1d
J1d
quartz vein
quartz vein
quartz vein
quartz veins
drainage ditch
70 cm, og
35 cm, og
90 cm, og
80 cm, og
1.3 m
2.8 m
1.1 m
1.6 m
30 cm, og
60 cm, og
60 cm, og
90 cm
80 cm
65 cm
90 cm
60 cm
60 cm
70 cm
45 cm
30 cm

Figure 45-4: Geology and trench locations at North Star No. 1 and No. 2 occurrence.

LOCATION: 46

NAME: K.U. No. 1
UTM: 400780E, 6076675N
AREA: approximately 1.5 km SE of southeast side of North Star Lake
ACCESS: via bush plane to North Star Lake, then traverse
AIRPHOTO: MB90024-171

EXPLORATION SUMMARY

This claim was staked in 1928 and was exposed in 3 trenches (Stockwell, 1935). In 1981 an airborne EM (INPUT) and magnetic survey was undertaken for BP Minerals Limited, followed by a geological mapping programme (A.F. 92828).

Seven trenches are present at the occurrence. Most of which were flooded when the occurrence was examined.

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 46-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The occurrence is located in the Eastern basalts of Norquay *et al.* (1993, 1994a, b) and Prouse and Gale (1993). The Eastern zone rocks are dominated by basaltic pillowed flows and fine- to medium-grained mafic intrusions (unit J1d) that are synvolcanic in part (Norquay *et al.*, 1993). The mafic volcanic rocks may correlate with the Preaston Formation (Bailes, 1980). The occurrence is located approximately 900 m east of Zaks Fault, a well defined, discrete, regional structure that separates the Eastern from the Central zone assemblage in this area.

The trench locations are shown on Fig. 46-2. The dominant rocks at the occurrence consist of massive and pillowed basalt some of which is finely laminated. It is unclear if the lamination is tectonically formed or represents finely layered mafic tuffaceous beds. A schistose interval trending 355° is exposed in the trenches. It contains discontinuous lenses and stringers of quartz across a thickness of up to 1.8 m.

MINERALIZATION

The quartz occurs as lenses and stringers within the shear zone. Chloritic wallrock inclusions are common. The vein material also includes minor carbonate. Stockwell (1935) indicated that minor disseminated pyrite and chalcopyrite were present in the quartz.

This occurrence may be the strike extension of the Jupiter No. 2 and 3 occurrence to the south.

GEOCHEMICAL DATA

No geochemical results have been reported for this occurrence.

CLASSIFICATION

Vein-type deposit; single vein. The quartz vein is hosted within a schistose interval of basalt.

REFERENCES

A.F. 92828; Cancelled Assessment File, Manitoba Industry, Trade and Mines, Minerals Division.

Bailes, A.H.

1980: Geology of the File Lake Area; Manitoba Energy and Mines, Mineral Resources Division, Geological Report 78-1, 134 pp.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Norquay, L.I., Prouse, D.E. and Gale, G.H.

1993: Geological investigations in the North Star Lake area (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1993, pp. 78-83.

1994a: The North Star Lake project (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1994, pp. 83-84.

1994b: North Star Lake (NTS 63K/15SE4); Manitoba Energy and Mines, Minerals Division, Preliminary Map 1994S-3, 1:10 000.

Prouse, D.E. and Gale, G.H.

1993: North Star Lake (NTS 63K/15SE4); Manitoba Energy and Mines, Minerals Division, Preliminary Map 1993S-3, 1:10 000.

Stockwell, C.H.

1935: Gold Deposits of the Elbow-Morton Area, Northern Manitoba; Geological Survey of Canada, Memoir 186, 74pp.

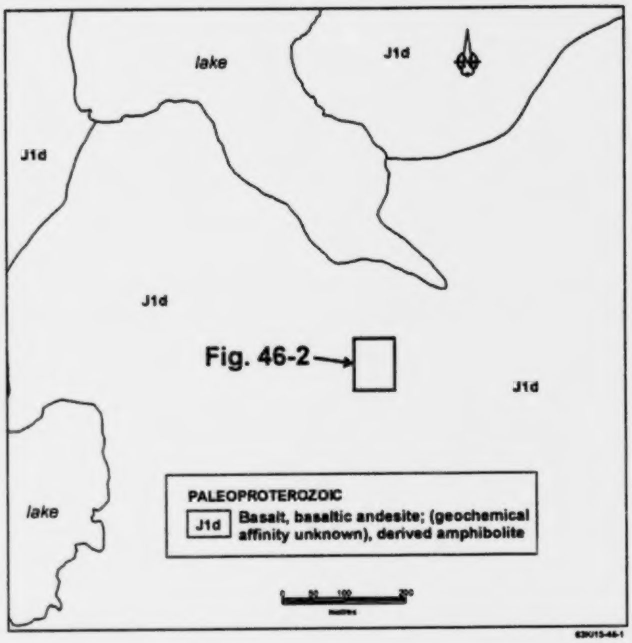
lake
J1d
J1d
J1d
Fig. 46-2
J1d
lake
PALEOPROTEROZOIC
J1d
Basalt, basaltic andesite; (geochemical affinity unknown), derived amphibolite
0
50
100
200
metres

Figure 46-1: Geological setting of K.U. No. 1 occurrence.

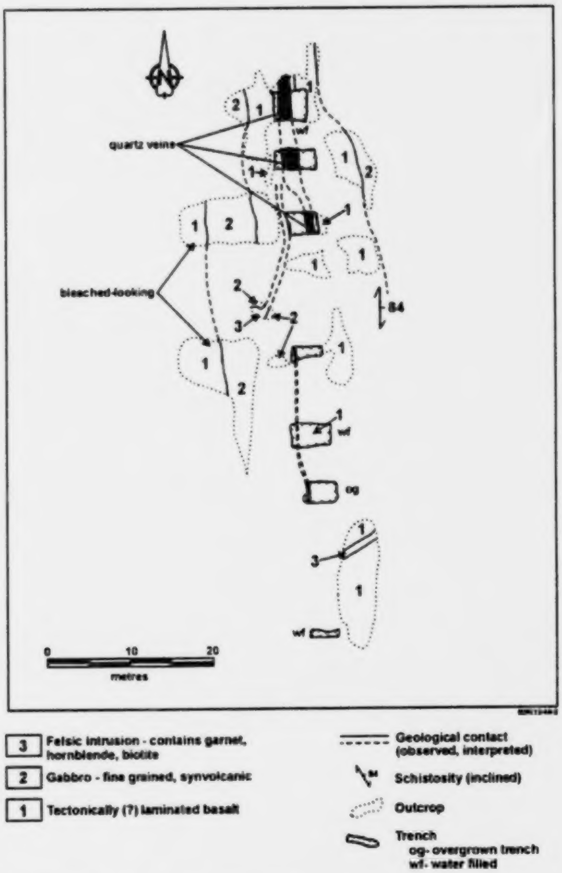
quartz veins
bleached-looking
2
1
1
2
1
2
1
1
1
1
2
3
2
84
1
2
1
wf
wf
og
3
1
1
wf
0
10
20
metres
3
Felsic intrusion - contains garnet, hornblende, biotite
2
Gabbro - fine grained, synvolcanic
1
Tectonically (?) laminated basalt
Geological contact (observed, interpreted)
Schistosity (inclined)
Outcrop
Trench
og- overgrown trench
wf- water filled

Figure 46-2: Geology and trench locations at K.U. No. 1 occurrence.

LOCATION: 47

NAME: Beaver
UTM: 399800E, 6076455N
AREA: approximately 1.5 km south of southeast side of North Star Lake
ACCESS: via bush plane to North Star Lake, then traverse
AIRPHOTO: MB90034-71

EXPLORATION SUMMARY

This claim was staked in 1928. Stockwell (1935) indicated the occurrence was exposed in 11 trenches along a strike length of approximately 110 m. In 1981 an airborne EM (INPUT) and magnetic survey was flown for BP Minerals Limited, followed by a geological mapping programme (A.F. 92828).

Stockwell's trenches were located during the 1993 examination of the occurrence. Most are either overgrown, flooded or caved, and bedrock is generally only poorly exposed. The 1989 fire that affected the surrounding area did not burn the vegetation at the occurrence, and the rock exposures remain lichen covered.

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 47-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The occurrence is located in the Eastern zone near the contact with the Central zone (Norquay *et al.*, 1993, 1994a, b; Prouse and Gale, 1993). The Eastern zone rocks are dominated by basaltic pillowed flows (Eastern basalts) and fine- to medium-grained mafic intrusions (grouped under unit J1d) that are synvolcanic in part (Norquay *et al.*, 1993). The mafic volcanic rocks may correlate with the Preaston Formation (Bailes, 1980).

The location of the trenches is shown in Fig. 47-2. The rocks at the occurrence are dominated by a fine-grained mafic lithology, possibly basalt. Strongly deformed pillow selvages appear to be present west of the southernmost trenches. The rocks have a well developed, steeply dipping schistosity trending 000-030°. The trenches have been excavated along a trend striking 030°.

MINERALIZATION

Several quartz veins to 60 cm thick and parallel to the schistosity of the basalt are exposed in the trenches, but have limited strike extent. The veins contain some carbonate, and minor disseminated pyrite was noted in the quartz. Stockwell (1935) also noted the presence of minor chalcopyrite.

The basalts at the occurrence contain up to 2% disseminated pyrrhotite.

GEOCHEMICAL DATA

No geochemical analyses have been reported for this occurrence.

CLASSIFICATION

Vein type deposit; single vein.

REFERENCES

A.F. 90491, 92828; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

Bailes, A.H.

1980: Geology of the File Lake Area; Manitoba Energy and Mines, Mineral Resources Division, Geological Report 78-1, 134 pp.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Norquay, L.I., Prouse, D.E. and Gale, G.H.

1993: Geological investigations in the North Star Lake area (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1993, pp. 78-83.

1994a: The North Star Lake project (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1994, pp. 83-84.

1994b: North Star Lake (NTS 63K/15SE4); Manitoba Energy and Mines, Minerals Division, Preliminary Map 1994S-3, 1:10 000.

Prouse, D.E. and Gale, G.H.

1993: North Star Lake (NTS 63K/15SE4); Manitoba Energy and Mines, Minerals Division, Preliminary Map 1993S-3, 1:10 000.

Stockwell, C.H.

1935: Gold Deposits of the Elbow-Morton Area, Northern Manitoba; Geological Survey of Canada, Memoir 186, 74pp.

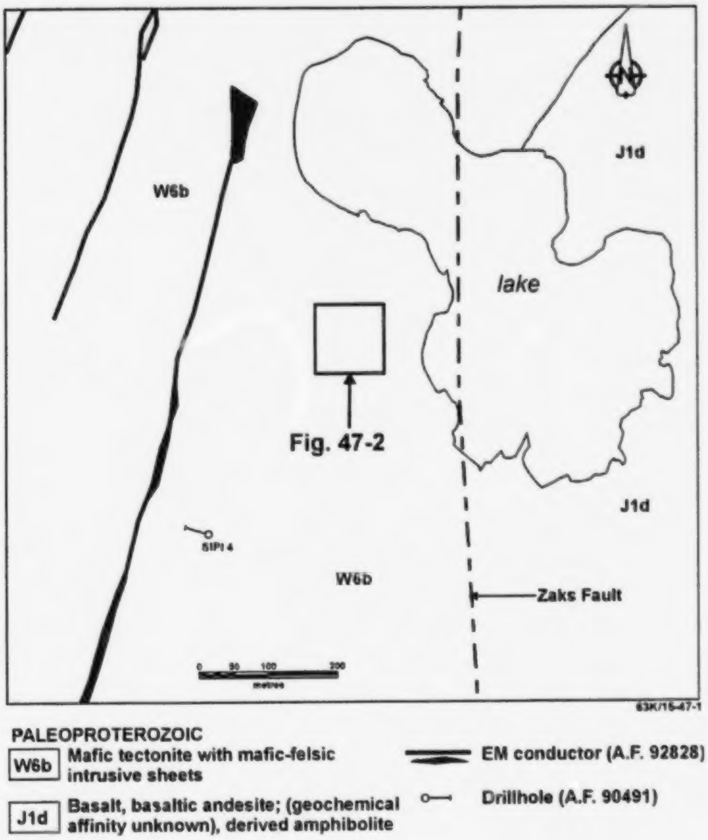
W6b
J1d
lake
Fig. 47-2
J1d
SIPI 4
W6b
Zaks Fault
0 50 100 200
metres
63K/15-47-1
PALEOPROTEROZOIC
W6b Mafic tectonite with mafic-felsic intrusive sheets
J1d Basalt, basaltic andesite; (geochemical affinity unknown), derived amphibolite
EM conductor (A.F. 92828)
Drillhole (A.F. 90491)

Figure 47-1: Geological setting of Beaver occurrence.

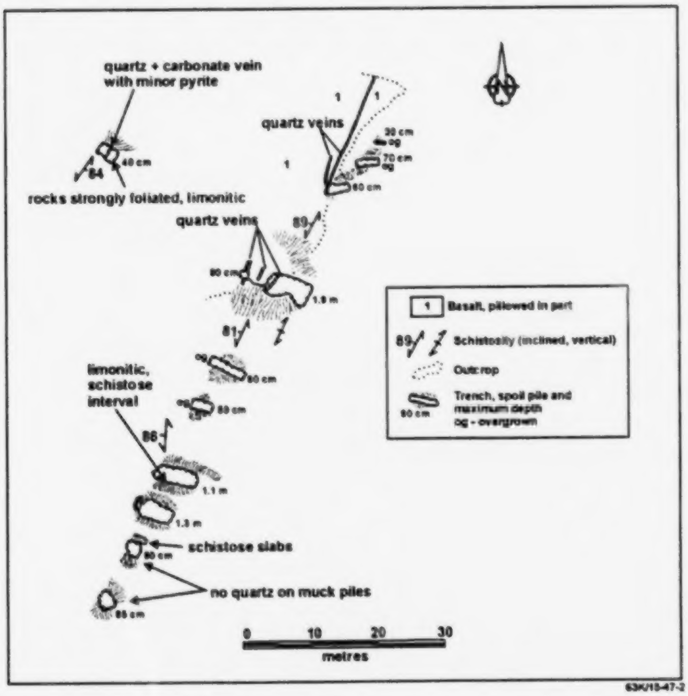
quartz + carbonate vein with minor pyrite
1
1
quartz veins
30 cm
og
70 cm
og
1
40 cm
84
80 cm
rocks strongly foliated, limonitic
quartz veins
89
80 cm
1.8 m
81
og
80 cm
limonitic, schistose interval
og
80 cm
86
1.1 m
1.3 m
schistose slabs
80 cm
no quartz on muck piles
85 cm
0 10 20 30
metres
1 Basalt, pillowed in part
89 Schistosity (inclined, vertical)
Outcrop
Trench, spoil pile and maximum depth
80 cm
og - overgrown
63K/15-47-2

Figure 47-2: Geology and trench locations at Beaver occurrence.

LOCATION: 48

NAME:
UTM: 399770E, 6075755N
AREA: approximately 2.2 km south of southeast side of North Star Lake
ACCESS: via bush plane to North Star Lake, then traverse
AIRPHOTO: MB90034-73

EXPLORATION SUMMARY

In 1981 an airborne EM (INPUT) and magnetic survey was undertaken on behalf of BP Minerals Limited, followed by a geological mapping programme (A.F. 92828).

Four trenches were located at the site, but no record was found to indicate who excavated them or when.

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 48-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The occurrence is located in the Eastern zone near the contact with the Central zone (Norquay *et al.*, 1993, 1994a, b; Prouse and Gale, 1993). The Eastern zone rocks are dominated by basaltic pillowed flows (Eastern basalts) and fine- to medium-grained mafic intrusions (grouped under unit J1d) that are synvolcanic in part (Norquay *et al.*, 1993). The mafic volcanic rocks may correlate with the Preaston Formation (Bailes, 1980). The occurrence is located approximately 200 m west of Zaks Fault, a well defined, discrete, regional structure.

The location of the trenches is shown in Fig. 48-2. The host rock for the occurrence is a foliated felsic dyke that contains minor quartz and feldspar phenocrysts. The host rocks for the dyke are pillowed basalt and massive equivalents. Contacts with the enclosing volcanic rocks are sharp, trending 007-021°. The schistosity varies from 006-025° and is subvertical.

MINERALIZATION

Discontinuous quartz stringers and veinlets up to 1 m thick are hosted by the felsic dyke. The quartz contains dark green, chloritic wallrock fragments. Pieces of vein material on one of the spoil piles contain up to 20% pyrite as limonite coated, vuggy masses.

GEOCHEMICAL DATA

No geochemical information is available for this occurrence.

CLASSIFICATION

Vein type deposit; single vein. Discontinuous quartz veins occur in a felsic dyke.

REFERENCES

A.F. 90491, 92828; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

Bailes, A.H.

1980: Geology of the File Lake Area; Manitoba Energy and Mines, Mineral Resources Division, Geological Report 78-1, 134 pp.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Norquay, L.I., Prouse, D.E. and Gale, G.H.

1993:Geological investigations in the North Star Lake area (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1993, pp. 78-83.

1994a: The North Star Lake project (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1994, pp. 83-84.

1994b: North Star Lake (NTS 63K/15SE4); Manitoba Energy and Mines, Minerals Division, Preliminary Map 1994S-3, 1:10 000.

Prouse, D.E. and Gale, G.H.

1993: North Star Lake (NTS 63K/15SE4); Manitoba Energy and Mines, Minerals Division, Preliminary Map 1993S-3, 1:10 000.

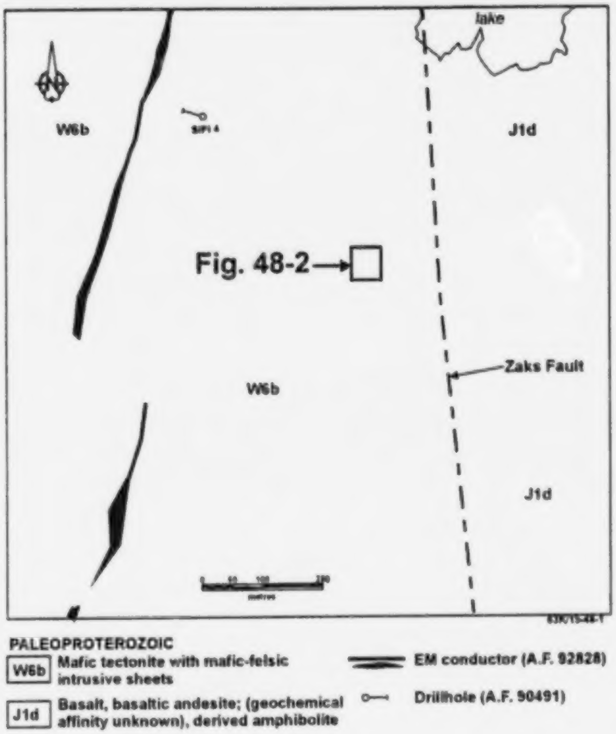
lake
W6b
J1d
Fig. 48-2
Zaks Fault
W6b
J1d
0
50
100
200
metres
PALEOPROTEROZOIC
W6b Mafic tectonite with mafic-felsic intrusive sheets
J1d Basalt, basaltic andesite; (geochemical affinity unknown), derived amphibolite
EM conductor (A.F. 92828)
Drillhole (A.F. 90491)

Figure 48-1: Geological setting of occurrence 48.

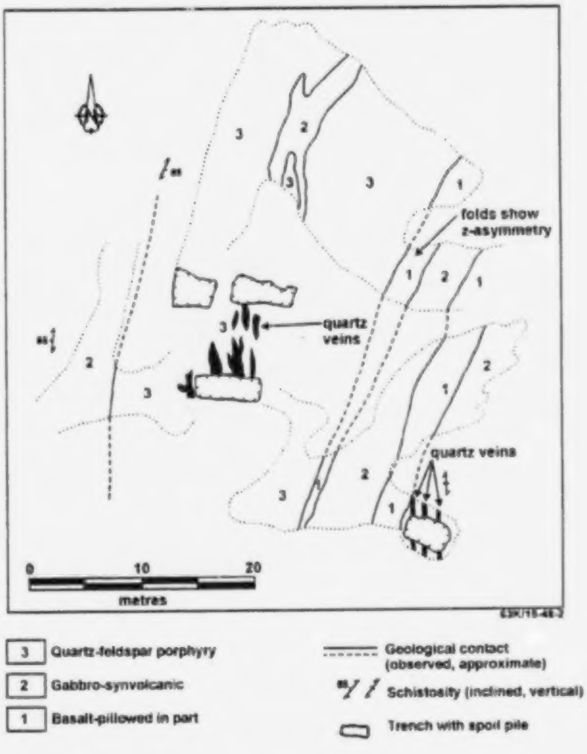
3
2
3
3
1
folds show z-asymmetry
1
2
1
3
quartz veins
2
3
2
1
quartz veins
2
3
1
0
10
20
metres
3 Quartz-feldspar porphyry
2 Gabbro-synvolcanic
1 Basalt-pillowed in part
Geological contact (observed, approximate)
Schistosity (inclined, vertical)
Trench with spoil pile

Figure 48-2: Trench locations and detailed geology at occurrence 48.

LOCATION: 49

NAME: Jupiter No. 2 and No. 3
UTM: 400440E, 6075685N
AREA: approximately 2.3 km SSE of southeast side of North Star Lake
ACCESS: via bush plane to North Star Lake, then traverse
AIRPHOTO: MB90024-140

EXPLORATION SUMMARY

The quartz veins at the occurrence were discovered in 1930 and staked by Messrs Axel Nieme and Charles Foss of The Pas (Stockwell, 1935). Many trenches and a shaft of unspecified depth were excavated prior to Stockwell's visit to the property. In 1976 and 1977 Mr J.W. Robinson undertook a prospecting and sampling programme at the occurrence (A.F. 92096, 92315), and indicated one shaft had been excavated to a depth of more than 14 m (45 ft.). In 1981 an airborne EM (INPUT) and magnetic survey was performed for BP Minerals Limited, followed by a geological mapping programme (A.F. 92828).

More than 60 trenches and 2 shafts were located during the 1994 examination of the occurrence. Most of the workings provided good bedrock exposures, but those in the southern part of the occurrence were generally overgrown and/or flooded.

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 49-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The occurrence is located in the Eastern zone east of Zaks Fault, a regional structure that separates the Eastern basalts (unit J1d) from lithologies of the Central zone (grouped under unit W6b) northwest of the occurrence (Norquay *et al.*, 1993, 1994a, b; Prouse and Gale, 1993). The Eastern zone rocks are dominated by basaltic pillowed flows (Eastern basalts) and fine- to medium-grained mafic intrusions that are synvolcanic in part (Norquay *et al.*, 1993). The mafic volcanic rocks may correlate with the Preaston Formation (Bailes, 1980) east of the map area.

The locations of the trenches are shown in Fig. 49-2, 49-3, 49-4, 49-5, 49-6 and 49-7. The rocks at the occurrence are dominated by a fine-grained mafic lithology, probably basalt. Strongly deformed pillow selvages are present west of the northern group of trenches. The rocks have a well developed, steeply dipping schistosity trending 005-030°, parallel to the trend of the main quartz vein. Feldspar porphyry and granitic intrusions intrude the mafic volcanic sequence and trend parallel to the schistosity. Schistosity in the feldspar porphyry parallels that of the enclosing volcanic rocks. Amphibole crystals in this dyke plunge 66° at 140°. The granitic dyke is poorly foliated and contains chloritic rock fragments. It may be part of a series of granitic plugs W and NW of the occurrence.

MINERALIZATION

The quartz occurs as a discontinuous vein system within the shear zone. The quartz vein ranges from a discrete feature consisting of milky quartz up to 360 cm thick to chlorite schist dominated intervals containing 30% quartz stringers and veinlets. The vein has been broken up along strike, in part by the feldspar porphyry intrusion. In some areas it appears to have been comminuted and truncated as a result of deformation along the shear zone that provided the locus for initial emplacement of the vein. Thickened portions of the vein may be related to shear folds along this structure, similar to that observed at the North Star No. 1 and 2 occurrence. Chloritic wallrock inclusions are common. The vein material also includes minor patches and stringers of buff weathering carbonate. Almost no sulphides were noted during the 1994 examination of the occurrence, but Stockwell (1935) indicates that minor disseminated pyrite, chalcopyrite and pyrrhotite are present in the quartz.

This occurrence may be the strike extension of the K.U. No. 1 occurrence to the north.

GEOCHEMICAL DATA

Assays from material obtained from one of the shafts returned values ranging from 31.16 to 65.07 g Au/t (0.91 to 1.90 oz. Au/ton) across 3 m (10 ft.) (Stockwell, 1935).

Samples collected from the north wall of the same (?) shaft (shaft #1, Fig. 49-3) returned the following values (A.F. 92096) (see table below).

Depth below surface	Sample width	g Au/t (oz. Au/ton)
0.9 m (3 ft.)	185 cm (73 in.)	11.575 (0.338)
2.4 m (8 ft.)	218 cm (86 in.)	29.247 (0.854)
4.0 m (13 ft.)	152 cm (60 in.)	0.514 (0.015) (west side of face)
4.0 m (13 ft.)	112 cm (44 in.)	0.685 (0.20) (east side of face)
5.5 m (18 ft.)	152 cm (60 in.)	15.822 (0.462) (west side of face)
5.5 m (18 ft.)	117 cm (46 in.)	2.055 (0.060) (east side of face)
7.0 m (23 ft.)	152 cm (60 in.)	26.096 (0.762) (west side of face)
7.0 m (23 ft.)	135 cm (53 in.)	1.233 (0.036) (east side of face)
8.5 m (28 ft.)	152 cm (60 in.)	0.171 (0.005) (west side of face)
8.5 m (28 ft.)	102 cm (40 in.)	3.493 (0.102) (east side of face)

The trenches SSW of the shaft were also sampled and the following assays obtained (see table below):

Trench No. (Fig. 49-3)	Sample width	g Au/t (oz. Au/ton)
1	91 cm (36 in.)	0.103 (0.003)
1	119 cm (47 in.)	1.301 (0.038)
1	137 cm (54 in.)	<0.1 (<0.003)
1	104 cm (41 in.)	0.171 (0.005)
2	140 cm (55 in.)	0.856 (0.025)
2	107 cm (42 in.)	0.753 (0.022)
3	163 cm (64 in.)	0.171 (0.005)
3	51 cm (20 in.) (?)	0.548 (0.016)
4	127 cm (50 in.)	0.411 (0.012)
4	135 cm (53 in.)	0.274 (0.008)
5	74 cm (29 in.)	0.171 (0.005)
5	74 cm (29 in.)	0.274 (0.008)
5	64 cm (25 in.)	<0.1 (<0.003)

CLASSIFICATION

Vein type deposit; single vein.

REFERENCES

A.F. 92096, 92315, 92828; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

Bailes, A.H.

1980: Geology of the File Lake Area; Manitoba Energy and Mines, Mineral Resources Division, Geological Report 78-1, 134 pp.

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1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Norquay, L.I., Prouse, D.E. and Gale, G.H.

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1994a: The North Star Lake project (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1994, pp. 83-84.

1994b: North Star Lake (NTS 63K/15SE4); Manitoba Energy and Mines, Minerals Division, Preliminary Map 1994S-3, 1:10 000.

Prouse, D.E. and Gale, G.H.

1993: North Star Lake (NTS 63K/15SE4); Manitoba Energy and Mines, Minerals Division, Preliminary Map 1993S-3, 1:10 000.

Stockwell, C.H.

1935: Gold Deposits of the Elbow-Morton Area, Northern Manitoba; Geological Survey of Canada, Memoir 186, 74pp.

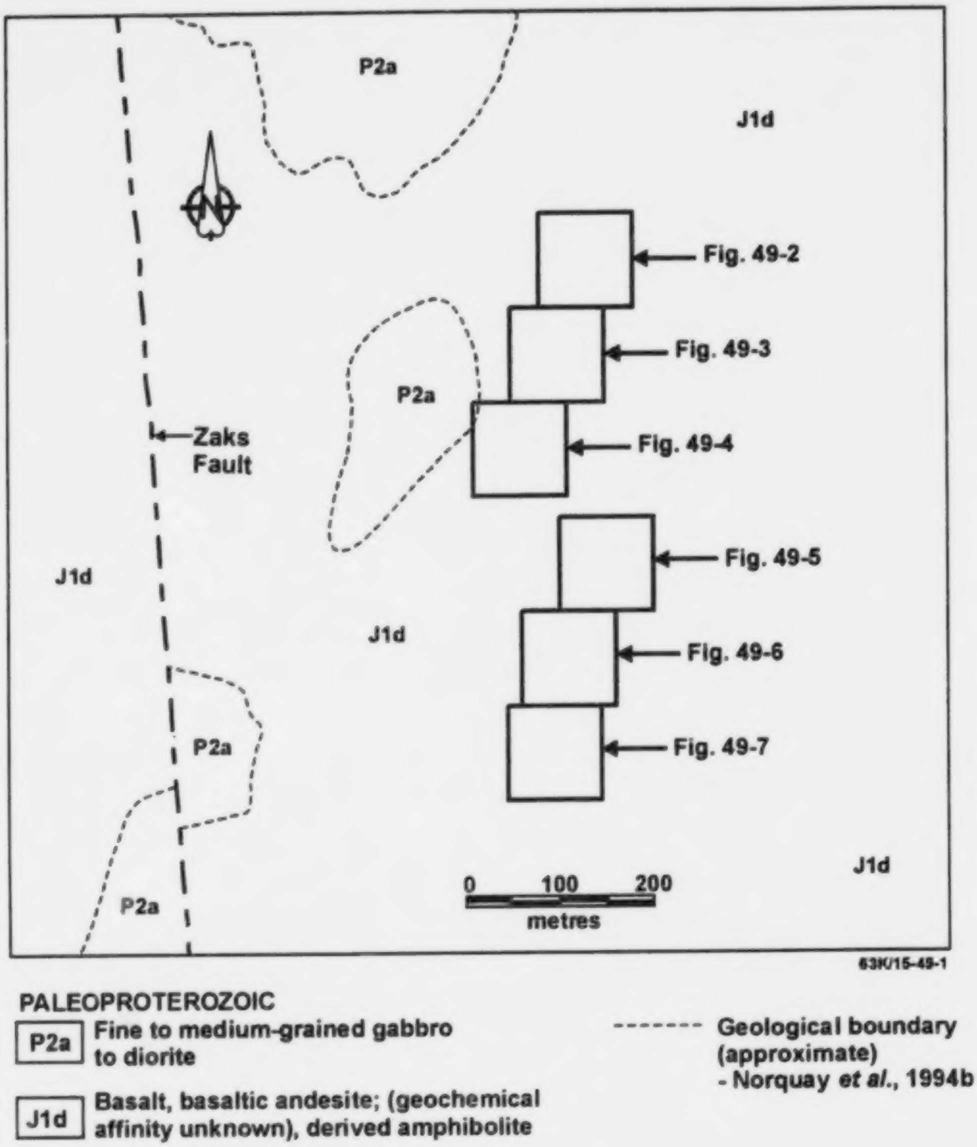

P2a
J1d
Fig. 49-2
Fig. 49-3
P2a
Zaks Fault
Fig. 49-4
J1d
Fig. 49-5
J1d
Fig. 49-6
P2a
Fig. 49-7
0
100
200
metres
J1d
P2a
63K/15-49-1
PALEOPROTEROZOIC
P2a Fine to medium-grained gabbro to diorite
J1d Basalt, basaltic andesite; (geochemical affinity unknown), derived amphibolite
Geological boundary (approximate)
- Norquay et al., 1994b

Figure 49-1: Geological setting of Jupiter No. 2 and No. 3 occurrence.

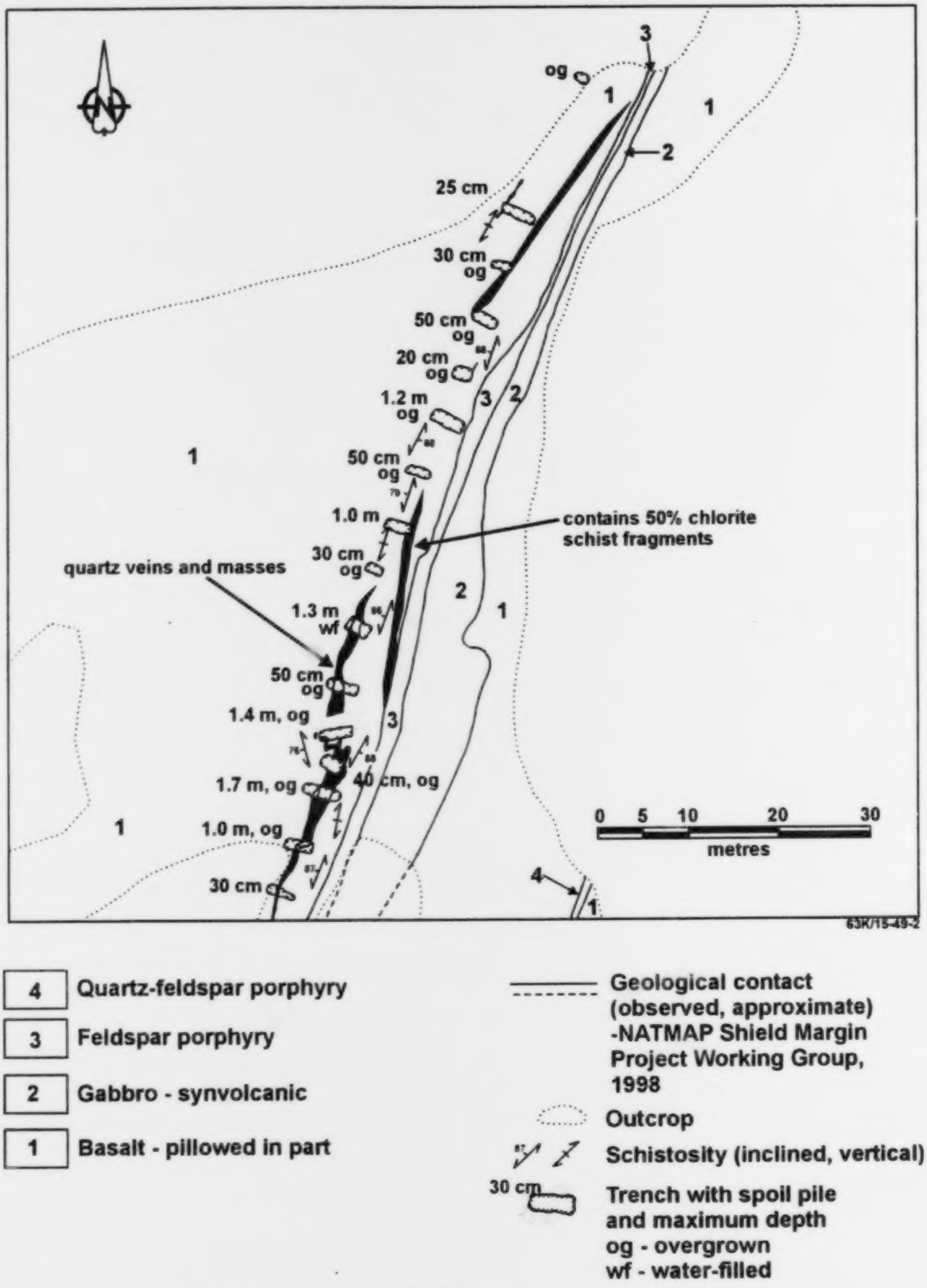

N
3
og
1
1
2
25 cm
30 cm
og
50 cm
og
20 cm
og
1.2 m
og
3
2
1
50 cm
og
1.0 m
contains 50% chlorite schist fragments
30 cm
og
quartz veins and masses
2
1
1.3 m
wf
50 cm
og
1.4 m, og
3
1.7 m, og
40 cm, og
1
1.0 m, og
0
5
10
20
30
metres
30 cm
4
1
63K/15-49-2
4 Quartz-feldspar porphyry
3 Feldspar porphyry
2 Gabbro - synvolcanic
1 Basalt - pillowed in part
Geological contact (observed, approximate) -NATMAP Shield Margin Project Working Group, 1998
Outcrop
Schistosity (inclined, vertical)
30 cm
Trench with spoil pile and maximum depth
og - overgrown
wf - water-filled

Figure 49-2: Geology and trench locations at Jupiter No. 2 and No. 3 occurrence.

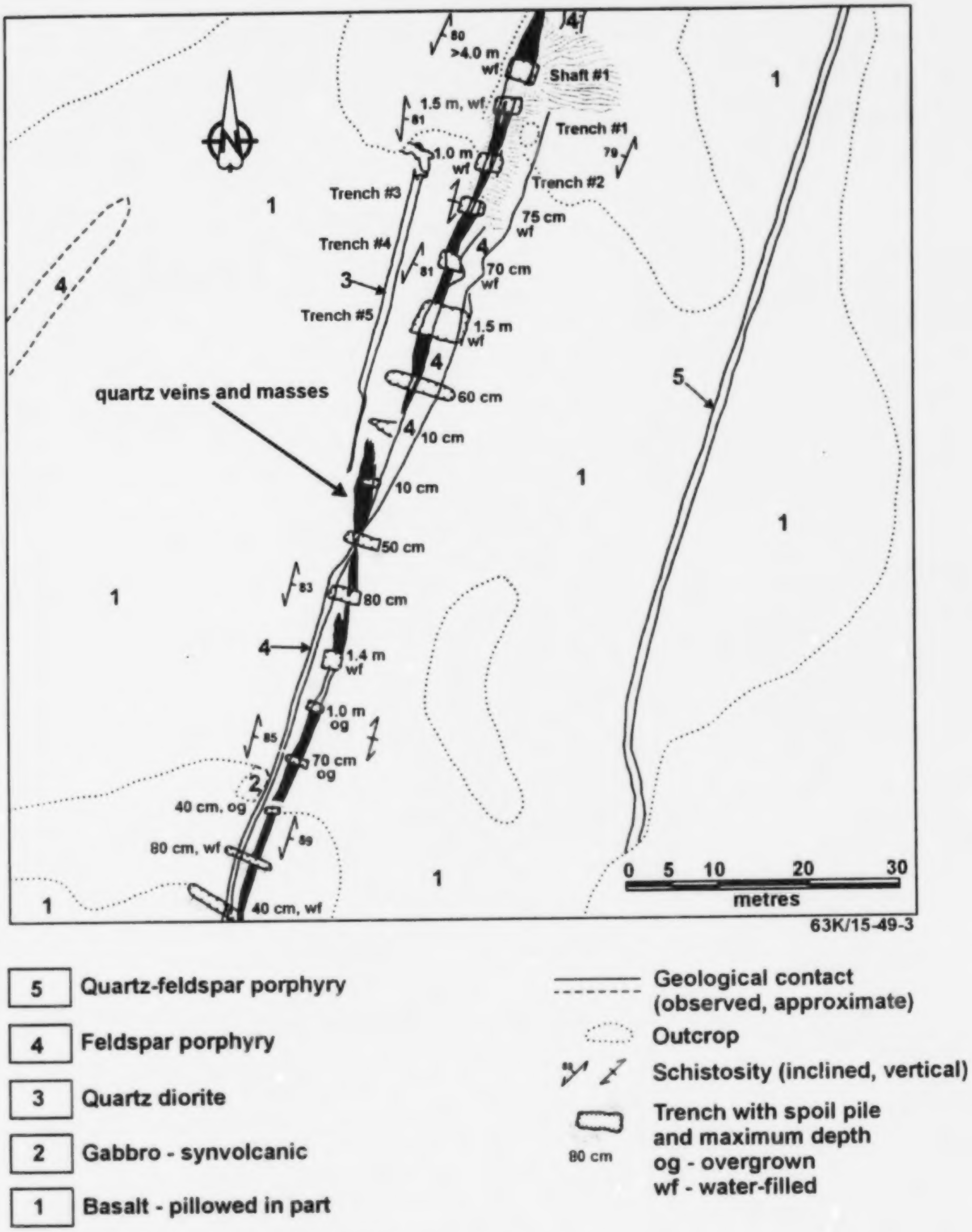

80
>4.0 m wf
Shaft #1
4
1.5 m, wf
81
Trench #1
79
1.0 m wf
Trench #2
Trench #3
1
75 cm wf
Trench #4
4
70 cm wf
3
81
Trench #5
1.5 m wf
4
4
5
quartz veins and masses
60 cm
4
10 cm
10 cm
1
1
50 cm
1
83
80 cm
4
1.4 m wf
1.0 m og
85
70 cm og
2
40 cm, og
89
80 cm, wf
1
1
40 cm, wf
0 5 10 20 30
metres
63K/15-49-3
5 Quartz-feldspar porphyry
4 Feldspar porphyry
3 Quartz diorite
2 Gabbro - synvolcanic
1 Basalt - pillowed in part
Geological contact (observed, approximate)
Outcrop
Schistosity (inclined, vertical)
Trench with spoil pile and maximum depth
80 cm
og - overgrown
wf - water-filled

Figure 49-3: Geology and trench locations at Jupiter No. 2 and No. 3 occurrence.

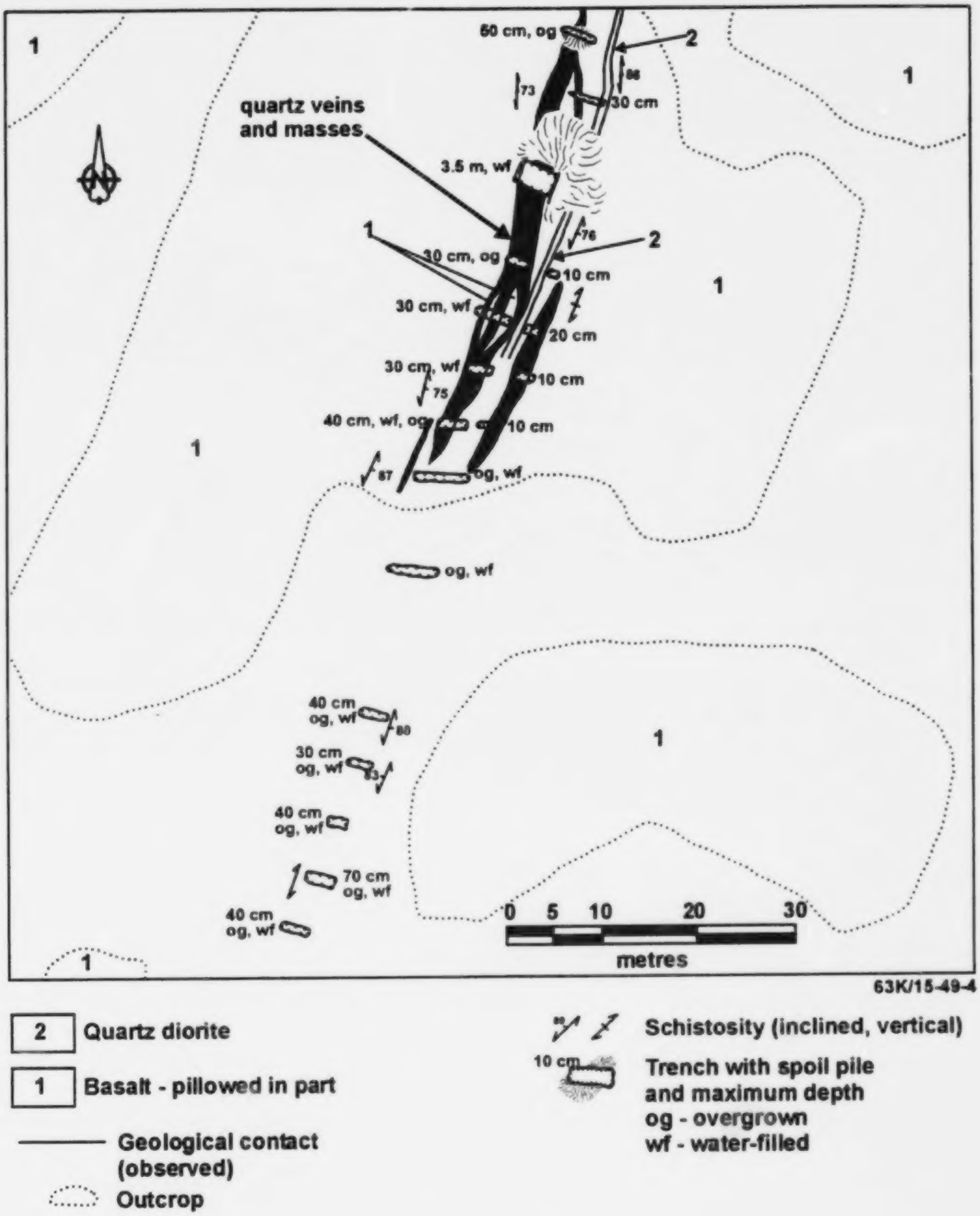

1
N
quartz veins
and masses
60 cm, og
2
86
73
30 cm
1
3.5 m, wf
76
2
1
30 cm, og
10 cm
1
30 cm, wf
20 cm
30 cm, wf
10 cm
75
40 cm, wf, og
10 cm
1
87
og, wf
og, wf
40 cm
og, wf
80
30 cm
og, wf
83
40 cm
og, wf
1
70 cm
og, wf
40 cm
og, wf
0 5 10 20 30
metres
1
63K/15-49-4
2 Quartz diorite
1 Basalt - pillowed in part
Geological contact (observed)
Outcrop
Schistosity (inclined, vertical)
10 cm
Trench with spoil pile and maximum depth
og - overgrown
wf - water-filled

Figure 49-4: Geology and trench locations at Jupiter No. 2 and No. 3 occurrence.

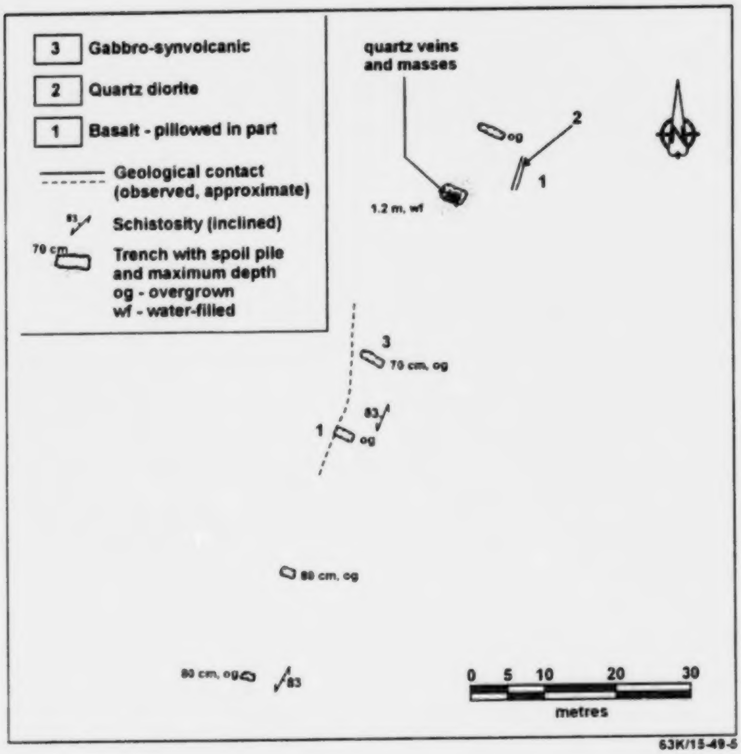

3 Gabbro-synvolcanic
2 Quartz diorite
1 Basalt - pillowed in part
Geological contact (observed, approximate)
83 Schistosity (inclined)
70 cm Trench with spoil pile and maximum depth
og - overgrown
wf - water-filled
quartz veins and masses
og
2
1
1.2 m, wf
3
70 cm, og
83
1
og
80 cm, og
80 cm, og
83
0 5 10 20 30
metres
63K/15-49-5

Figure 49-5: Geology and trench locations at Jupiter No. 2 and No. 3 occurrence.

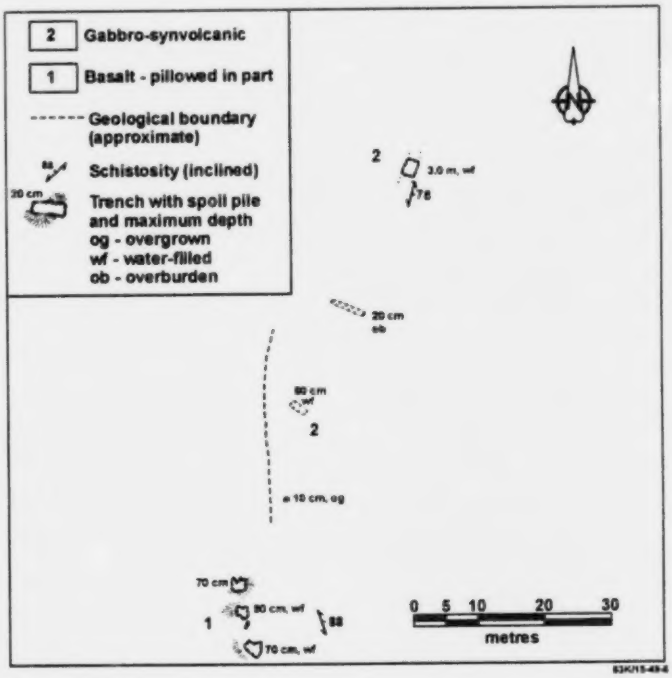

2 Gabbro-synvolcanic
1 Basalt - pillowed in part
Geological boundary (approximate)
88 Schistosity (inclined)
20 cm Trench with spoil pile and maximum depth
og - overgrown
wf - water-filled
ob - overburden
2
3.0 m, wf
78
20 cm ob
80 cm wf
2
10 cm, og
70 cm
1
80 cm, wf
88
70 cm, wf
0 5 10 20 30
metres
63K/15-49-6

Figure 49-6: Geology and trench locations at Jupiter No. 2 and No. 3 occurrence.

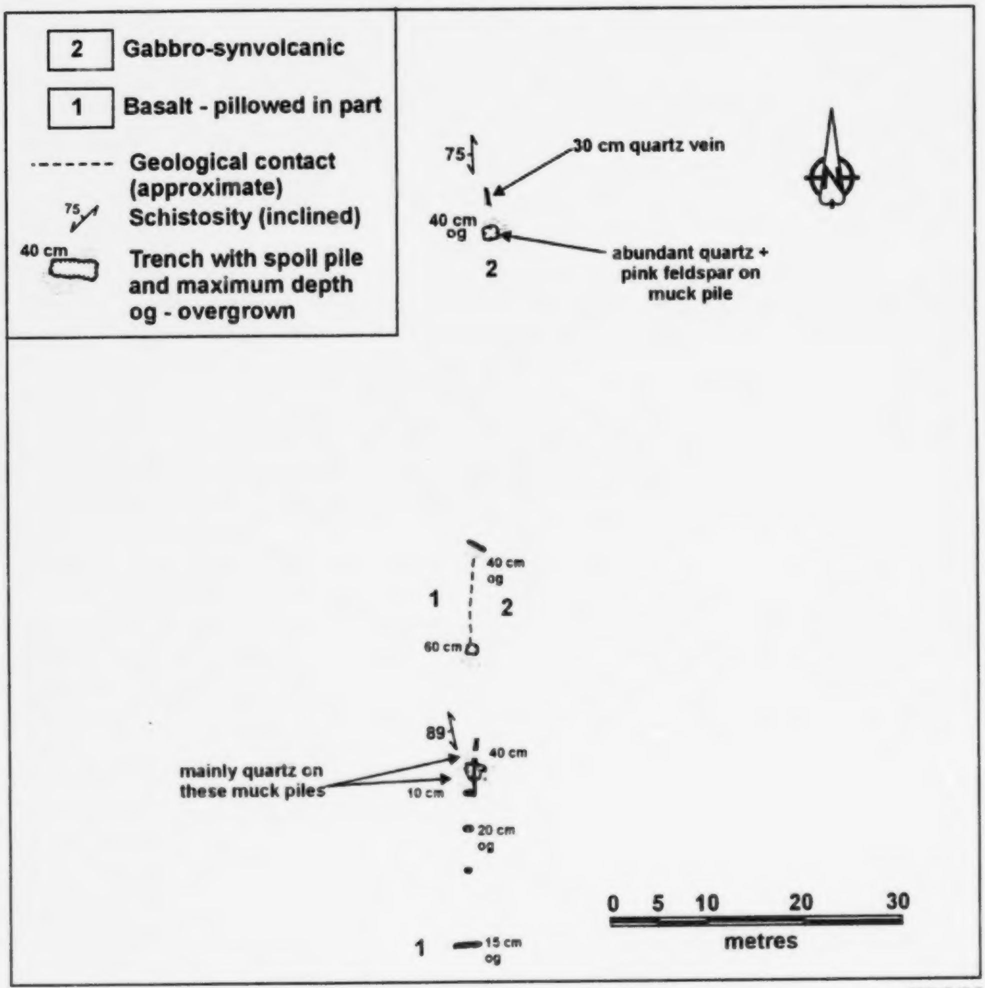

2 Gabbro-synvolcanic
1 Basalt - pillowed in part
Geological contact (approximate)
75 Schistosity (inclined)
40 cm Trench with spoil pile and maximum depth
og - overgrown
75
30 cm quartz vein
40 cm og
abundant quartz + pink feldspar on muck pile
2
40 cm og
1
2
60 cm
89
40 cm
mainly quartz on these muck piles
10 cm
20 cm og
1
15 cm og
0 5 10 20 30
metres
63K/15-49-7

Figure 49-7: Geology and trench locations at Jupiter No. 2 and No. 3 occurrence.

LOCATION: 50

NAME: Winnipeg-Jupiter No. 7
UTM: 399950E, 6075595N
AREA: approximately 2.3 km south of southeast side of North Star Lake
ACCESS: via bush plane to North Star Lake, then traverse
AIRPHOTO: MB90034-74

EXPLORATION SUMMARY

The Winnipeg claim was staked in 1928 by Mr George Solberg and the Jupiter No. 7 in 1930 by Mr Mike Talo. Stockwell (1935) indicated the occurrence was exposed in several trenches. In 1977 Mr J.W. Robinson undertook a prospecting programme in the area (A.F. 92315). In 1981 an airborne EM (INPUT) and magnetic survey was flown for BP Minerals Limited, followed by a geological mapping programme (A.F. 92828).

Two pits up to 3 m deep have been excavated at the north end of the occurrence, probably subsequent to Stockwell's visit. Several shallow trenches were located SSW of the deep pits, and these are mostly caved, overgrown and/or flooded.

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 50-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The occurrence is located in the Eastern zone immediately west of Zaks Fault, a regional brittle structure (Norquay *et al.*, 1993, 1994a, b; Prouse and Gale, 1993). The Eastern zone rocks in the area are dominated by basaltic pillowed flows and fine- to medium-grained mafic intrusions (unitJ1d) that are synvolcanic in part (Norquay *et al.*, 1993). These rocks may correlate with the Preaston Formation (Bailes, 1980) east of the map area.

The trench locations are shown in Fig. 50-2 and 50-3. The rocks at the occurrence are dominated by a fine-grained mafic lithology, probably basalt. Strongly deformed pillows are sometimes present. The sequence contains massive intervals that show sharp to gradational contacts with the enclosing pillowed flows, and probably represent flow interiors. The rocks have a well developed, steeply dipping schistosity trending 010-030°. Fine-grained feldspar porphyry and a thin amphibolitic dyke parallel to the foliation in the volcanic rocks are present in the occurrence area.

The location of Zaks Fault is marked by the north-trending valley immediately east of the occurrence. Outcrops on both sides of the valley expose strongly brecciated rocks, in part cemented with white weathering carbonate. The character of this deformed interval is identical to that exposed west of the North Star No. 1 and 2 occurrence.

MINERALIZATION

A discontinuous quartz vein trending approximately 020° is exposed in trenches and outcrops. It is up to 100 cm thick and varies from a discrete single well defined vein containing up to 40% lithic fragments to intervals dominated by chlorite schist with 30% quartz stringers and veinlets. Its character is probably a result of continued deformation within the schistose interval that provided the site for emplacement of the vein. Rare disseminated pyrite grains were noted in the quartz during the 1992 examination of the occurrence, and Stockwell (1935) indicates the presence of minor pyrrhotite and chalcopyrite.

GEOCHEMICAL DATA

No assays were reported for this occurrence.

CLASSIFICATION

Vein type deposit; single vein.

REFERENCES

A.F. 90491, 92315, 92828; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

Bailes, A.H.

1980: Geology of the File Lake Area; Manitoba Energy and Mines, Mineral Resources Division, Geological Report 78-1, 134 pp.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Norquay, L.I., Prouse, D.E. and Gale, G.H.

1993: Geological investigations in the North Star Lake area (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1993, pp. 78-83.

1994a: The North Star Lake project (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1994, pp. 83-84.

1994b: North Star Lake (NTS 63K/15SE4); Manitoba Energy and Mines, Minerals Division, Preliminary Map 1994S-3, 1:10 000.

Prouse, D.E. and Gale, G.H.

1993: North Star Lake (NTS 63K/15SE4); Manitoba Energy and Mines, Minerals Division, Preliminary Map 1993S-3, 1:10 000.

Stockwell, C.H.

1935: Gold Deposits of the Elbow-Morton Area, Northern Manitoba; Geological Survey of Canada, Memoir 186, 74pp.

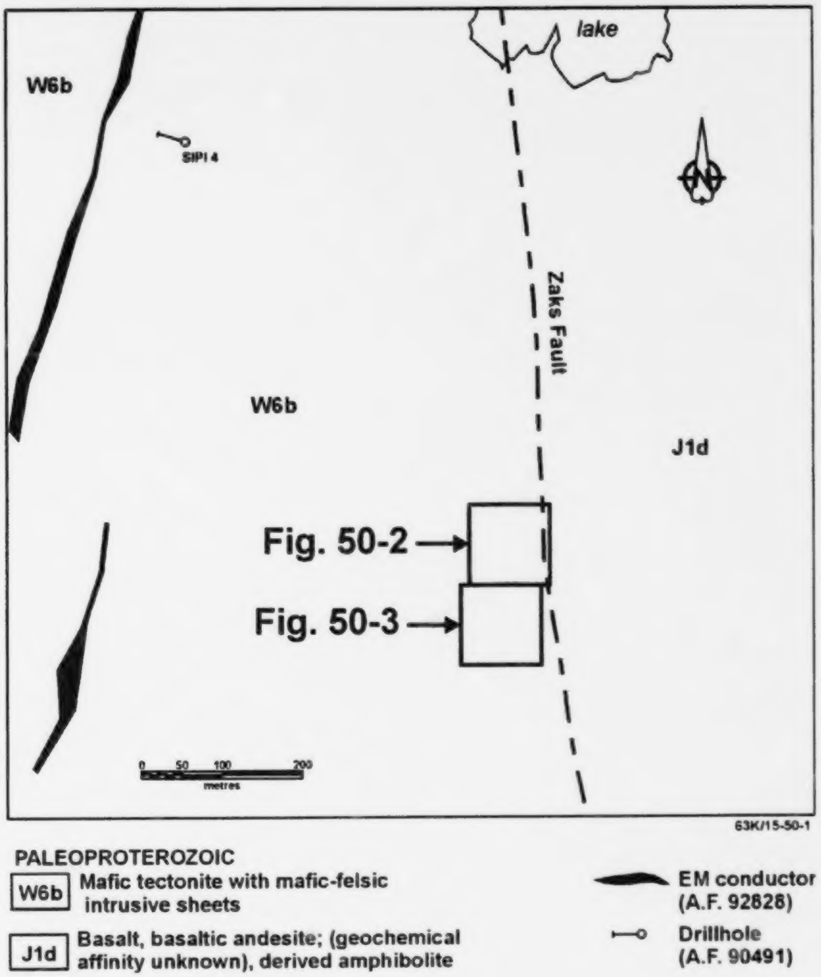
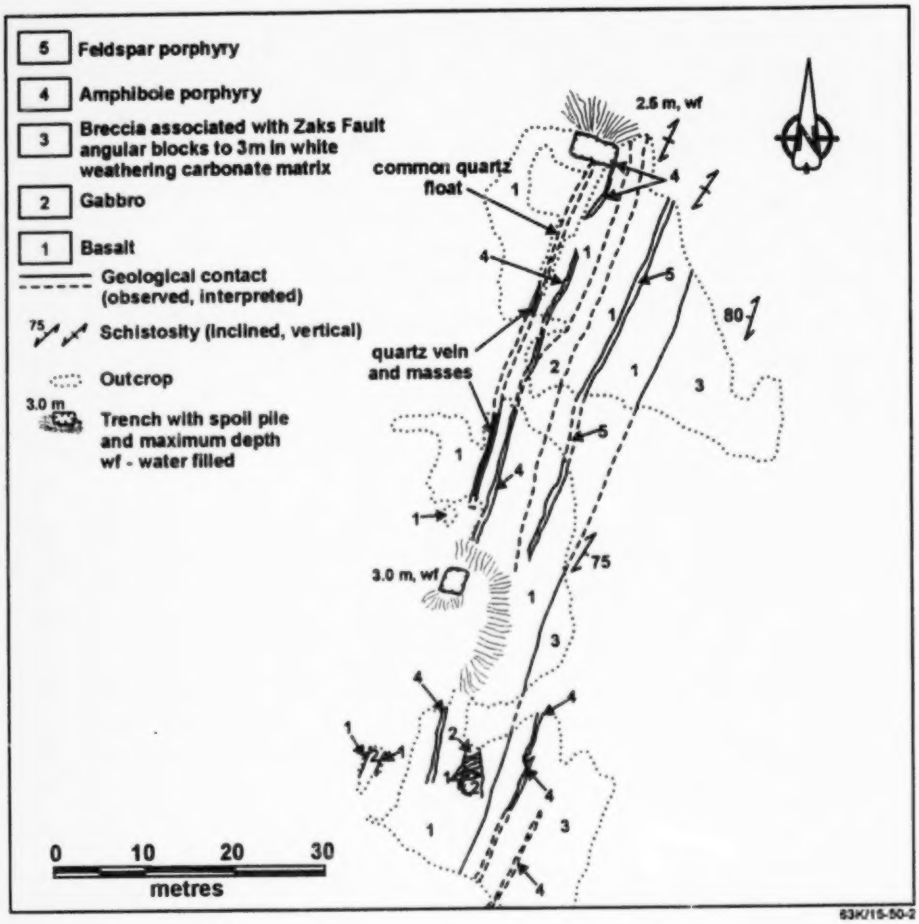

lake
W6b
SIPI 4
Zaks Fault
W6b
J1d
Fig. 50-2
Fig. 50-3
0 50 100 200
metres
63K/15-50-1
PALEOPROTEROZOIC
W6b Mafic tectonite with mafic-felsic intrusive sheets
J1d Basalt, basaltic andesite; (geochemical affinity unknown), derived amphibolite
EM conductor (A.F. 92828)
Drillhole (A.F. 90491)

Figure 50-1: Geological setting of Winnipeg-Jupiter No. 7 occurrence.


5 Feldspar porphyry
4 Amphibole porphyry
3 Breccia associated with Zaks Fault angular blocks to 3m in white weathering carbonate matrix
2 Gabbro
1 Basalt
Geological contact (observed, interpreted)
75 Schistosity (inclined, vertical)
Outcrop
3.0 m Trench with spoil pile and maximum depth wf - water filled
2.5 m, wf
common quartz float
quartz vein and masses
3.0 m, wf
80
75
0 10 20 30
metres

63K/15-50-2

Figure 50-2: Geology and trench locations at Winnipeg and Jupiter No. 7 occurrence.

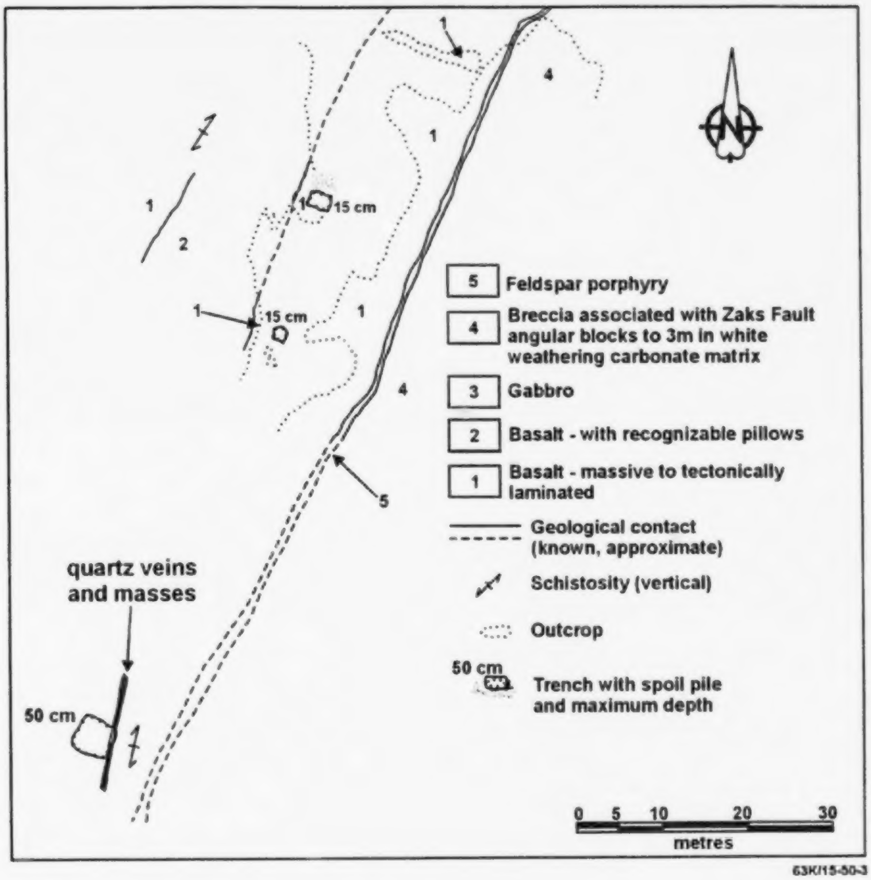

1
4
1
1
2
15 cm
1
15 cm
1
4
5
5 Feldspar porphyry
4 Breccia associated with Zaks Fault angular blocks to 3m in white weathering carbonate matrix
3 Gabbro
2 Basalt - with recognizable pillows
1 Basalt - massive to tectonically laminated
Geological contact (known, approximate)
Schistosity (vertical)
Outcrop
50 cm
Trench with spoil pile and maximum depth
quartz veins and masses
50 cm
0 5 10 20 30
metres
63K/15-50-3

Figure 50-3: Geology and trench locations at Winnipeg and Jupiter No. 7 occurrence.

LOCATION: 51

NAME: Bonny-Castle
UTM: 399530E, 6075105N
AREA: approximately 2.8 km SSW of southeast side of North Star Lake
ACCESS: via bush plane to North Star Lake, then traverse
AIRPHOTO: MB90034-74

EXPLORATION SUMMARY

Mr Oliver Evans staked this claim in 1932, and several trenches were excavated (Stockwell, 1935). In 1981 an airborne EM (INPUT) and magnetic survey was performed for BP Minerals Limited, followed by a geological mapping programme (A.F. 92828).

One trench and a stripped area were located during the 1992 examination of the occurrence.

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 51-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The occurrence is located in the Eastern zone west of Zaks Fault, a regional brittle structure (Norquay *et al.*, 1993, 1994a, b; Prouse and Gale, 1993). The Eastern zone rocks are dominated by basaltic pillowed flows and fine- to medium-grained mafic intrusions (unit J1d) that are synvolcanic in part (Norquay *et al.*, 1993). The mafic volcanic rocks may correlate with the Preaston Formation (Bailes, 1980) east of the map area.

The occurrence is underlain by massive and pillowed mafic volcanic rocks, probably basalt. The pillowed intervals show a high degree of deformation, and have been folded and flattened.

MINERALIZATION

A NNW-trending quartz vein to 70 cm thick is present in the trench. It shows a patchy limonitic stain, but no sulphides were noted. Small quantities of disseminated pyrite occur in the wallrock. Spoil piles in the stripped area contain minor quartz. The veins in both exposures appear to have little strike extent. Stockwell (1935) noted the presence of a small quantity of pyrrhotite.

GEOCHEMICAL DATA

No assays were reported for this occurrence.

CLASSIFICATION

Vein type deposit; single vein.

REFERENCES

A.F. 90491, 92828; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

Bailes, A.H.

1980: Geology of the File Lake Area; Manitoba Energy and Mines, Mineral Resources Division, Geological Report 78-1, 134 pp.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Norquay, L.I., Prouse, D.E. and Gale, G.H.

1993: Geological investigations in the North Star Lake area (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1993, pp. 78-83.

1994a: The North Star Lake project (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1994, pp. 83-84.

1994b: North Star Lake (NTS 63K/15SE4); Manitoba Energy and Mines, Minerals Division, Preliminary Map 1994S-3, 1:10 000.

Prouse, D.E. and Gale, G.H.

1993: North Star Lake (NTS 63K/15SE4); Manitoba Energy and Mines, Minerals Division, Preliminary Map 1993S-3, 1:10 000.

Stockwell, C.H.

1935: Gold Deposits of the Elbow-Morton Area, Northern Manitoba; Geological Survey of Canada, Memoir 186, 74pp.

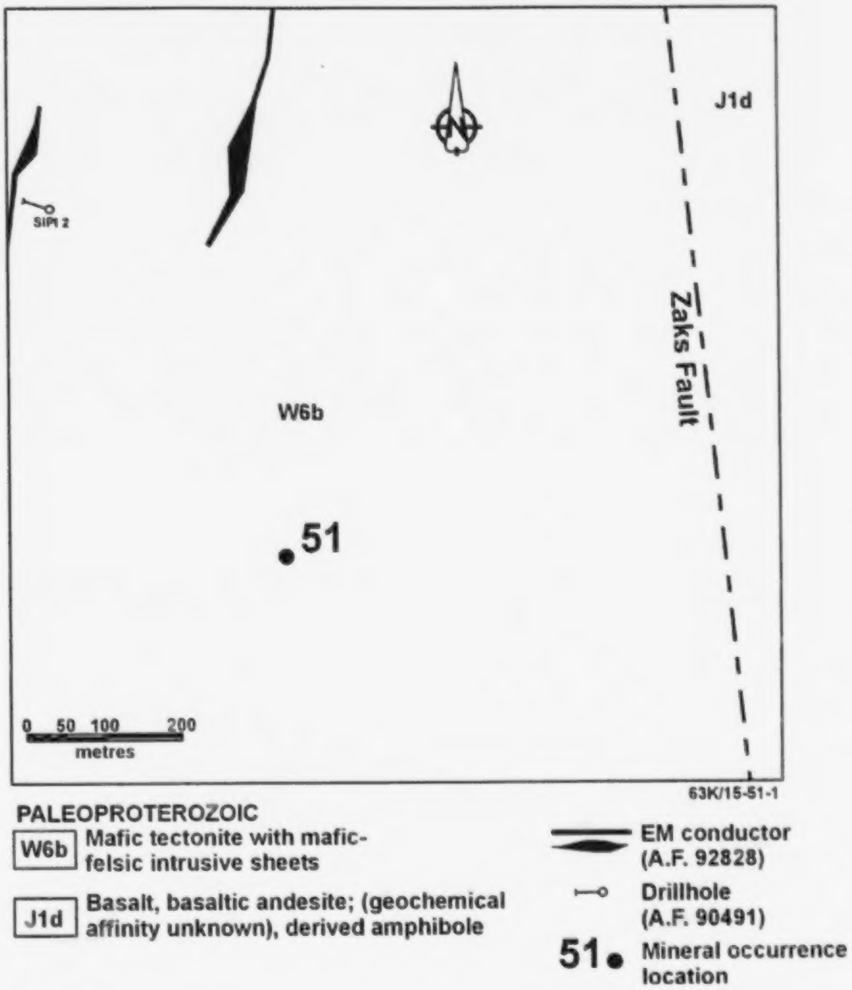

J1d
Zaks Fault
SIPI 2
W6b
51
0 50 100 200
metres
63K/15-51-1
PALEOPROTEROZOIC
W6b Mafic tectonite with mafic-felsic intrusive sheets
J1d Basalt, basaltic andesite; (geochemical affinity unknown), derived amphibole
EM conductor (A.F. 92828)
Drillhole (A.F. 90491)
51 Mineral occurrence location

Figure 51-1: Geological setting of Bonny-Castle occurrence.

LOCATION: 52

NAME: Snow
UTM: 399780E, 6077345N
AREA: approximately 600 m south of southeast side of North Star Lake
ACCESS: via bush plane to North Star Lake, then traverse
AIRPHOTO: MB90034-69

EXPLORATION SUMMARY

The claims were staked in 1928 by Mr Hjalmer Peterson (Stockwell, 1935). In 1956-57 Hudson Bay Exploration and Development Company, Limited performed an EM (loop-frame) equipment over the occurrence area (A.F. 90491) and subsequently drilled the conductor at the occurrence (A.F. 90493). In 1981 an airborne EM (INPUT) and magnetic survey was performed for BP Minerals Limited, followed by a geological mapping programme (A.F. 92828).

A cribbed pit and several trenches (Fig. 52-2) were located at the occurrence during the 1993 examination of the prospect. Bedrock is generally only poorly exposed in the excavations.

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 52-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The occurrence is located in the Central zone approximately 250 m west of Zaks Fault, a regional brittle structure that separates the Eastern zone basalts (unit J1d) from lithologies of the Central zone (grouped under unit W6b) (Norquay *et al.*, 1993, 1994a, b; Prouse and Gale, 1993). The Central zone lithologies are dominated by layered volcaniclastic rocks and minor felsic and mafic volcanic rocks.

The trench locations are shown in Fig. 52-2. The occurrence is underlain by a light medium grey weathering, weakly banded, garnetiferous lithology that may represent an intermediate volcaniclastic rock. Dark green, banded, calcareous amphibolite lenses and layers containing up to 20% garnet porphyroblasts occur within the "volcaniclastic" unit. These show a complex fold pattern with Z-asymmetry. Folded quartz masses without lateral continuity are a minor constituent of this sequence.

MINERALIZATION

The rock around the cribbed pit consists of limonitic, decrepitated schistose fragments. Ostry (1985) examined the occurrence and indicated that it contains solid to near solid (to 80%) pyrrhotite units. Pyrite occurs as uncommon isometric poikiloblasts. Chalcopyrite is a rare constituent, and occurs as thin fracture fillings.

During the most recent examination of the occurrence, no sulphides were observed and no bedrock is exposed at the cribbed pit location. A folded limonitic zone occurs as a discrete layer within the volcaniclastic unit NE of the pit (Fig. 52-2). Parts of this unit are moderately chloritic, and it contains up to 5% disseminated pyrrhotite. In the area of the easternmost trench, limonitic overburden suggests that the sulphide-rich layer is approximately 6 m thick. Minor pyrite is present in some places. Stockwell (1935) noted that minor sphalerite was present.

GEOCHEMICAL DATA

Stockwell (1935) indicated the owner of the property obtained the following values across 3.6 m (12 ft.) of the occurrence: 0.41% Ni, 0.42% Cu, 0.26% Zn, 0.68 g Au/t (0.02 oz. Au/ton).

CLASSIFICATION

Stratabound massive sulphide type deposit; volcanic rock associated. Disseminated pyrrhotite in possible volcaniclastic rock layer.

REFERENCES

A.F. 90491, 90493, and 92828; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Norquay, L.I., Prouse, D.E. and Gale, G.H.

1993: Geological investigations in the North Star Lake area (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1993, pp. 78-83.

1994a: The North Star Lake project (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1994, pp. 83-84.

1994b: North Star Lake (NTS 63K/15SE4); Manitoba Energy and Mines, Minerals Division, Preliminary Map 1994S-3, 1:10 000.

Ostry, G.

1985: Mineral occurrence studies in the North Star Lake area of Manitoba; in Manitoba Energy and Mines, Geological Services, Mines Branch, Report of Field Activities, 1985, pp. 80-81.

Prouse, D.E. and Gale, G.H.

1993: North Star Lake (NTS 63K/15SE4); Manitoba Energy and Mines, Minerals Division, Preliminary Map 1993S-3, 1:10 000.

Stockwell, C.H.

1935: Gold Deposits of the Elbow-Morton Area, Northern Manitoba; Geological Survey of Canada, Memoir 186, 74pp.

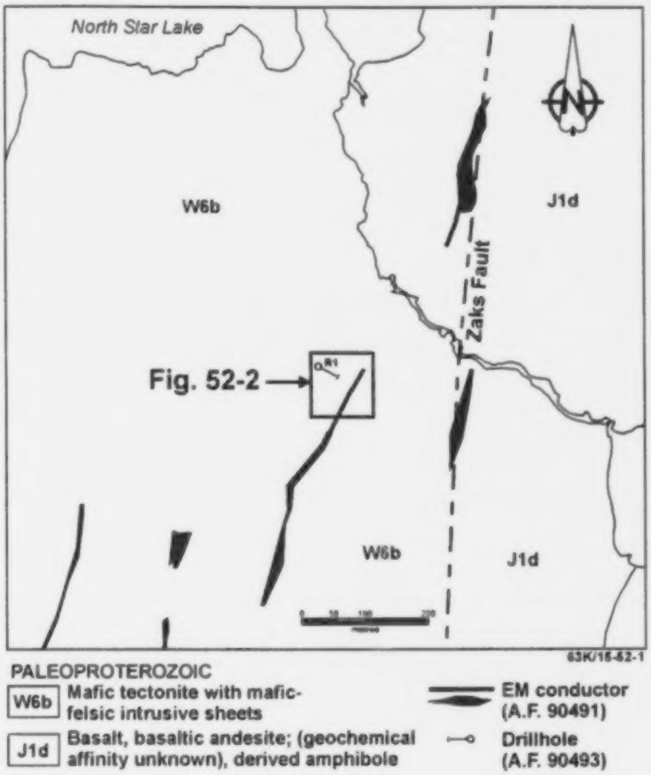

North Star Lake
W6b
J1d
Zaks Fault
Fig. 52-2
R1
W6b
J1d
0 50 100 200
metres
63K/15-52-1
PALEOPROTEROZOIC
W6b Mafic tectonite with mafic-felsic intrusive sheets
J1d Basalt, basaltic andesite; (geochemical affinity unknown), derived amphibole
EM conductor (A.F. 90491)
Drillhole (A.F. 90493)

Figure 52-1: Geological setting of Snow occurrence.

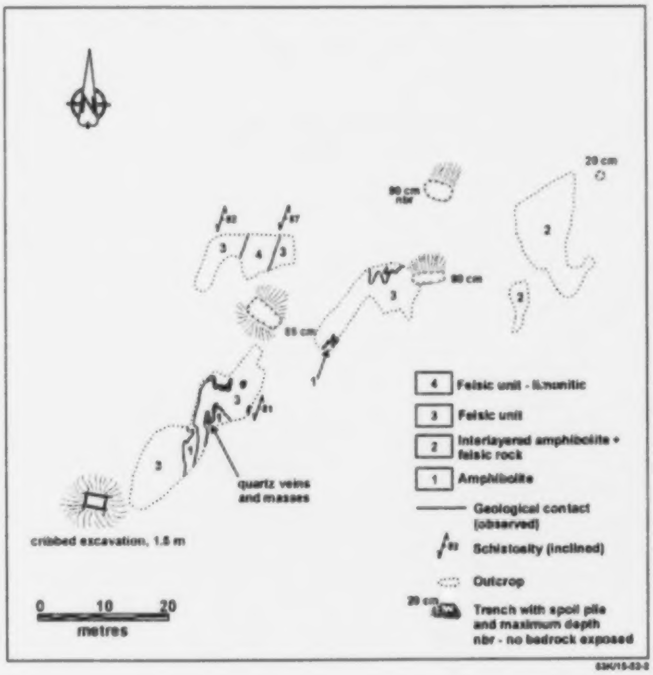

20 cm
90 cm
nbr
82
87
3
4
3
2
90 cm
3
2
85 cm
1
3
81
1
3
1
quartz veins and masses
cribbed excavation, 1.5 m
4 Felsic unit - limonitic
3 Felsic unit
2 Interlayered amphibolite + felsic rock
1 Amphibolite
Geological contact (observed)
81 Schistosity (inclined)
Outcrop
20 cm Trench with spoil pile and maximum depth
nbr - no bedrock exposed
0 10 20
metres
63K/15-52-2

Figure 52-2: Geology and trench locations at Snow occurrence.

LOCATION: 53

NAME: Eva
UTM: 399560E, 6076575N
AREA: approximately 1.4 km south of southeast side of North Star Lake
ACCESS: via bush plane to North Star Lake, then traverse
AIRPHOTO: MB90027-203

EXPLORATION SUMMARY

This occurrence was staked in 1930 by Mr Oliver Evans (Stockwell, 1935). In 1956-57 Hudson Bay Exploration and Development Company, Limited performed an EM survey (loop-frame system) over the occurrence area, and drilled several of the conductors delineated by this survey (A.F. 90491). In 1981 an airborne EM (INPUT) and magnetic survey was performed for BP Minerals Limited, followed by a geological mapping programme (A.F. 92828).

The trenches indicated by Stockwell (1935) were located in 1992 and are overgrown. Several recently excavated trenches are located to the NNE and SE of the original excavations.

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 53-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The occurrence is located in the Central zone (grouped under unit W6b) of the North Star Lake supracrustal assemblage, and is dominated by layered volcaniclastic and minor felsic and mafic volcanic rocks (Norquay *et al.*, 1993, 1994a, b; Prouse and Gale, 1993).

The trench locations are shown in Fig. 53-2. The occurrence is underlain by light medium grey weathering, weakly banded lithology that may be an intermediate volcaniclastic rock. Garnet porphyroblasts to 5 mm and averaging 1 mm are a common accessory in this unit. Dark green amphibolitic units are interlayered with the volcaniclastic rock. Minor folds showing S-asymmetry are present in some of the outcrops. Quartz masses with little strike continuity are a common minor constituent of this sequence.

MINERALIZATION

The original focus of exploration at this occurrence appears to have been a quartz vein. The spoil piles around the overgrown trenches contain abundant limonite stained quartz. Stockwell (1935) indicated the quartz vein exposed in the trenches ranged from 0.5 m (1.5 ft.) to 1.7 m (5.5 ft.) thick, and was "... well mineralized with patches and veinlets of pyrite and ... scattered blebs of pyrrhotite and rare veinlets of sphalerite."

Exposures to the north and NNE of the original trenches contain limonitic areas, and some of the overburden has a red-brown colour due to abundant Fe oxides. Several trenches have been excavated in these areas. The rocks in these areas of the occurrence contain up to 5% disseminated pyrrhotite which appears to be concentrated in the more siliceous bands.

GEOCHEMICAL DATA

No assays have been reported for this occurrence.

CLASSIFICATION

Vein type deposit; single vein.

REFERENCES

A.F. 90491 and 92828; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Norquay, L.I., Prouse, D.E. and Gale, G.H.

1993: Geological investigations in the North Star Lake area (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1993, pp. 78-83.

1994a: The North Star Lake project (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1994, pp. 83-84.

1994b: North Star Lake (NTS 63K/15SE4); Manitoba Energy and Mines, Minerals Division, Preliminary Map 1994S-3, 1:10 000.

Prouse, D.E. and Gale, G.H.

1993: North Star Lake (NTS 63K/15SE4); Manitoba Energy and Mines, Minerals Division, Preliminary Map 1993S-3, 1:10 000.

Stockwell, C.H.

1935: Gold Deposits of the Elbow-Morton Area, Northern Manitoba; Geological Survey of Canada, Memoir 186, 74pp.

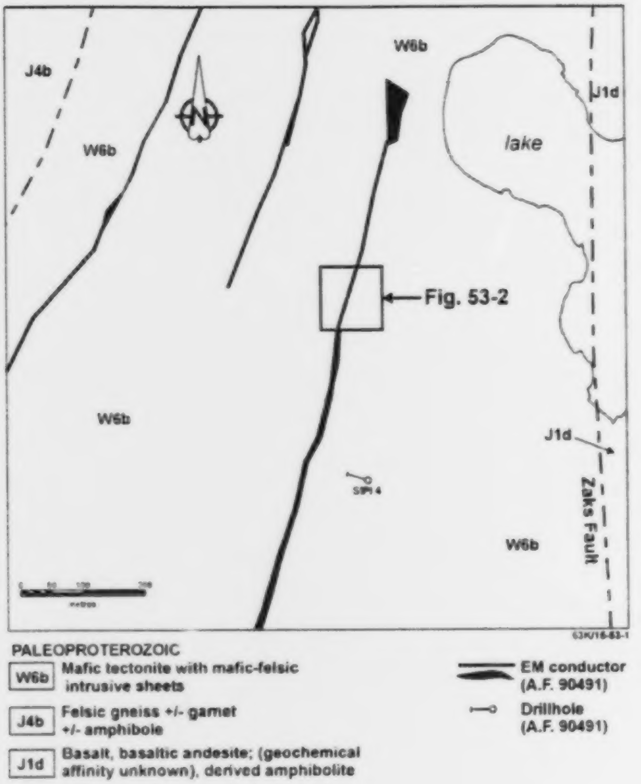

J4b
W6b
W6b
J1d
lake
Fig. 53-2
W6b
J1d
SIPI 4
Zaks Fault
W6b
0 50 100 200
metres
63K/16-53-1
PALEOPROTEROZOIC
W6b Mafic tectonite with mafic-felsic intrusive sheets
J4b Felsic gneiss +/- garnet +/- amphibole
J1d Basalt, basaltic andesite; (geochemical affinity unknown), derived amphibolite
EM conductor (A.F. 90491)
Drillhole (A.F. 90491)

Figure 53-1: Geological setting of Eva occurrence.

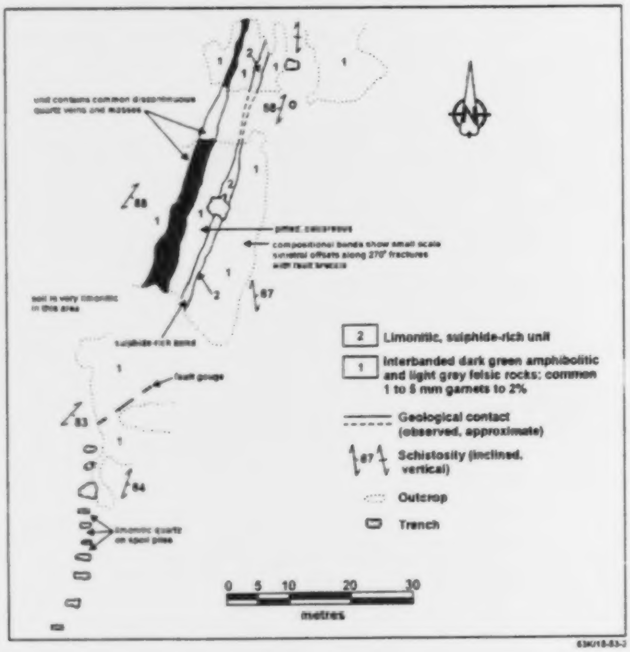

unit contains common discontinuous quartz veins and masses
58
88
pitted, calcareous
compositional bands show small scale sinistral offsets along 270° fractures with fault breccia
87
soil is very limonitic in this area
sulphide-rich band
fault gouge
83
84
limonitic quartz on spoil piles
2 Limonitic, sulphide-rich unit
1 Interbanded dark green amphibolitic and light grey felsic rocks; common 1 to 5 mm garnets to 2%
Geological contact (observed, approximate)
87 Schistosity (inclined, vertical)
Outcrop
Trench
0 5 10 20 30
metres
63K/16-53-2

Figure 53-2: Geology and trench locations at Eva occurrence

LOCATION: 54

NAME: Lon Zone
UTM: 399760E, 6087725N
AREA: approximately 4.3 km SW of Loonhead Lake
ACCESS: via bush plane to Loonhead Lake, then traverse
AIRPHOTO: MB90024-164

EXPLORATION SUMMARY

A property ownership summary for claims in this area is provided in Mineral Inventory File 983. In 1956 and 1957 a ground EM survey using loop-frame equipment was performed over the area by Hudson Bay Exploration and Development (HBED), and some of the conductive responses were drilled in 1957 and 1958 (A.F. 90488, 90489). HBED followed up the results of the previous programmes in 1964 with another drill programme in the Lon Zone area (A.F. 91608). In 1981 an airborne EM (INPUT) and magnetic survey was performed for BP Minerals Limited, followed by a geological mapping programme (A.F. 92828).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 54-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The Lon Zone is located in the Central zone of the North Star Lake supracrustal assemblage, dominated by layered volcaniclastic and minor felsic and mafic volcanic rocks (Norquay *et al.*, 1993, 1994a, b). At the occurrence the sequence consists of two rhyolite units (unit J1e), the Lower and Upper rhyolites, separated by a mafic volcanic assemblage (unit J4b) containing banded iron formation (Norquay *et al.*, 1993, 1994b).

The host rocks for the occurrence are described as "quartz-hornblende-feldspar gneisses" with various quantities of accessory minerals (A.F. 91608). "Quartzite" intervals are noted in the lithologic descriptions, and probably represent rhyolitic units. Chlorite and garnet are common accessories, and in some intervals are the dominant components.

The sequence intersected by holes LON-1, -3 and -5 consists of "quartzite" and moderately- to well-foliated quartz-feldspar-biotite±amphibole±garnet ±muscovite±chlorite "gneisses" (A.F. 91607, 91608). This "gneissic" assemblage is similar to the dominantly supracrustal rocks mapped at surface in the occurrence area. The detail of the lithologic descriptions for the drill holes is not sufficient to allow direct correlation with units exposed in outcrop. It appears likely the "quartzite" units described in holes LON-1 and -3 represent rhyolitic flows.

MINERALIZATION

Mineralized intervals were intersected in holes LON-1, -3 and -5 as follows (A.F. 91607, 91608) (see table below).

Hole No.	Interval	Mineralization
LON-1	30.2-38.1 m (99.0-125.0 ft.)	to 40% pyrite, in quartz-amphibole-chlorite-feldspar "gneiss"
	38.1-49.8 m (125.0-163.3 ft.)	to 40% pyrrhotite, to 20% pyrite, in quartz-amphibole-chlorite-feldspar±garnet "gneiss"
	284.0-285.6 m (931.9-936.9 ft.)	to 50% pyrrhotite, to 5% sphalerite, to 2% chalcopyrite, in biotite-feldspar-quartz-amphibole "gneiss"
	285.6-286.5 m (936.9-940.0 ft.)	to 15% pyrrhotite, to 0.2% sphalerite, to 1% chalcopyrite, in quartz-chlorite-feldspar-biotite "gneiss"
LON-3	312.2-313.0 m (1024.2-1026.8 ft.)	"near solid" mineralization, to 50% pyrrhotite, "good" chalcopyrite and sphalerite, in quartz-feldspar-biotite-amphibole-muscovite "gneiss"
	313.5-315.3 m (1028.6-1034.4 ft.)	"near solid" mineralization, to 40% pyrrhotite, "good" (to 1%) chalcopyrite and sphalerite, in quartz-feldspar-biotite-amphibole and quartz feldspar "gneiss"
LON-5	338.8-340.3 m (1111.7-1116.6 ft.)	minor to "near solid" mineralization, to 3% chalcopyrite, to 3.5% sphalerite, to 25% pyrrhotite, in quartz-feldspar-biotite-muscovite and amphibole-biotite "gneiss"

Fedikow (1978) examined mineralized drill core from the occurrence and provided the following description. "The sphalerite ... occurs as podiform masses or void fillings while chalcopyrite occurs as disseminations and/or stringers. In this hole (LON-1) Zn>Cu with (up to) 15% sphalerite and 5% chalcopyrite. The sulphide mineralization is irregular and is present over an approximately 1.25 m (interval) in the core." No mineralization is exposed in outcrop.

GEOCHEMICAL DATA

No assays have been reported in the non-confidential assessment files submitted for this occurrence. Mineral Inventory File 983 indicates E & B Explorations Ltd. followed up previous drill results that had intersected a mineralized zone up to 3.9 m thick containing 1.00-8.75% Cu, and 6.1-9.0% Zn. One of their drill holes intersected a 2.2 m section grading 4.52% Cu, 8.15% Zn, 44.23 g Ag/t, and 0.93 g Au/t. Subsequent work delineated a 226 860 t deposit grading 2.51% Cu, 4.82% Zn,

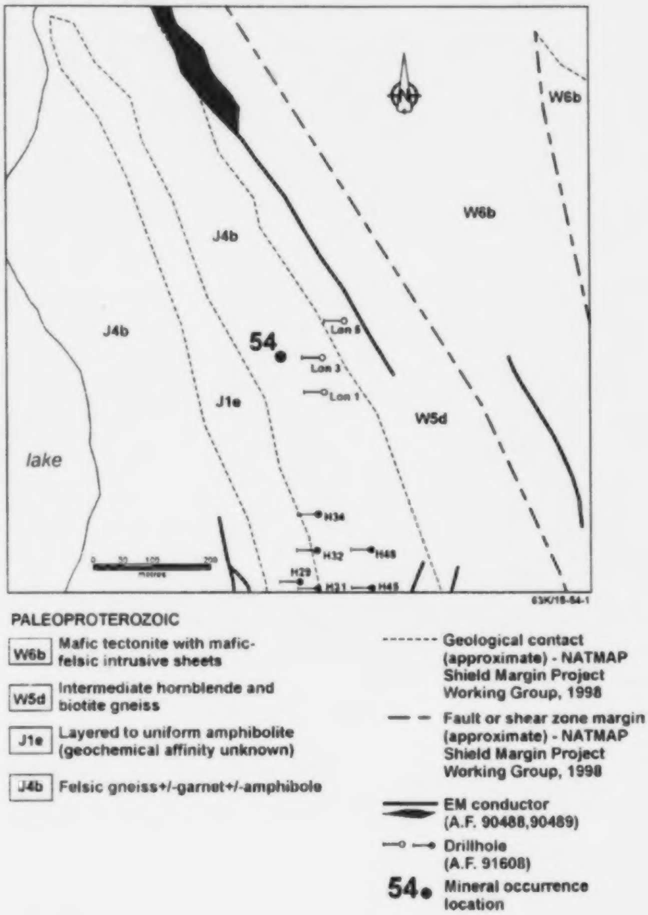

W6b
W6b
J4b
J4b
54
Lon 5
Lon 3
Lon 1
J1e
W5d
lake
H34
H32
H48
H29
H21
H45
0 50 100 200
metres
63K/15-54-1
PALEOPROTEROZOIC
W6b Mafic tectonite with mafic-felsic intrusive sheets
W5d Intermediate hornblende and biotite gneiss
J1e Layered to uniform amphibolite (geochemical affinity unknown)
J4b Felsic gneiss+/-garnet+/-amphibole
Geological contact (approximate) - NATMAP Shield Margin Project Working Group, 1998
Fault or shear zone margin (approximate) - NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 90488,90489)
Drillhole (A.F. 91608)
54● Mineral occurrence location

Figure 54-1: Geological setting of Lon Zone.

20.78 g Ag/t, and 0.55 g Au/t over an average thickness of 2.0 m to a depth of 366 m (November 1981, Vancouver Stock Exchange filing statement in Manitoba Mines Branch, Corporation File, Bar Resources Limited). It is unclear if these results were obtained from the Lon Zone.

CLASSIFICATION

Stratabound massive sulphide type deposit; volcanic rock associated. The rocks associated with this occurrence show evidence of pervasive hydrothermal alteration and exhalative activity (chloritic and highly garnetiferous areas), but no well defined associated hydrothermal alteration zone has been delineated.

REFERENCES

A.F. 90488, 90489, 91607, 91608, 92828; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

Fedikow, M.A.F.

1978: Notes and observations from H.B.E.D. D.D.H. LON #1 – LON #5; Manitoba Industry, Trade and Mines, personal notes.

Mineral Inventory File 983, Manitoba Industry, Trade and Mines

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Norquay, L.I., Prouse, D.E. and Gale, G.H.

1993: Geological investigations in the North Star Lake area (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1993, pp. 78-83.

1994a: The North Star Lake project (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1994, pp. 83-84.

1994b: North Star Lake (NTS 63K/15NE1); Manitoba Energy and Mines, Minerals Division, Preliminary Map 1994S-2, 1:10 000.

LOCATION: 55

NAME: Martell (Wood) Lake occurrence
UTM: 394410E, 6095375N
AREA: approximately 300 m W of west shore of Martell (Wood) Lake
ACCESS: via bush plane to Martell (Wood) Lake, then traverse
AIRPHOTO: MB90026-42

EXPLORATION SUMMARY

Robertson (1950, 1953) indicated a gold occurrence along the west side of Martell (Wood) Lake. It was also mentioned by Gale and Ostry (1984), but the workings associated with this occurrence were not located until 1987 (Ostry, 1987). An HLEM (MaxMin II) survey was carried out for Gränges Exploration AB along the NE side of Martell Lake in 1984 (A.F. 92663). In 1986 and 1987 Noko Resources Incorporated undertook prospecting, geological mapping, soil and rock geochemical surveys in the area. Several shallow holes were drilled by Noko in 1987 to test the extension of the previously trenched veins (A.F. 93707), and mineralization encountered during the 1987 programme (A.F. 93720).

Seven trenches and mineralized areas were located by Ostry (1987), and the occurrence description is largely taken from his account.

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 55-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The Dow Lake-Martell Lake area marks the intersection of three 1.92-1.88 Ga juxtaposed terranes: the Elbow-Athapap back-arc basin floor, the Northeast Reed ocean floor basalt, and screens of volcanic arc related basalt and andesite bounded by two panels of ocean floor rocks. Metasedimentary rocks with minor metavolcanic units belonging to the Missi and Burntwood suites form a significant portion of the underlying rocks. The structure in this area is dominated by large folds, thrust faults and shear zones that separate the various assemblages (Zwanzig, 1996 a,b). The supracrustal assemblage has been intruded by a series of magmatic arc-related (1.83-1.87 Ga) and synkinematic (<1.82 Ga) intrusions.

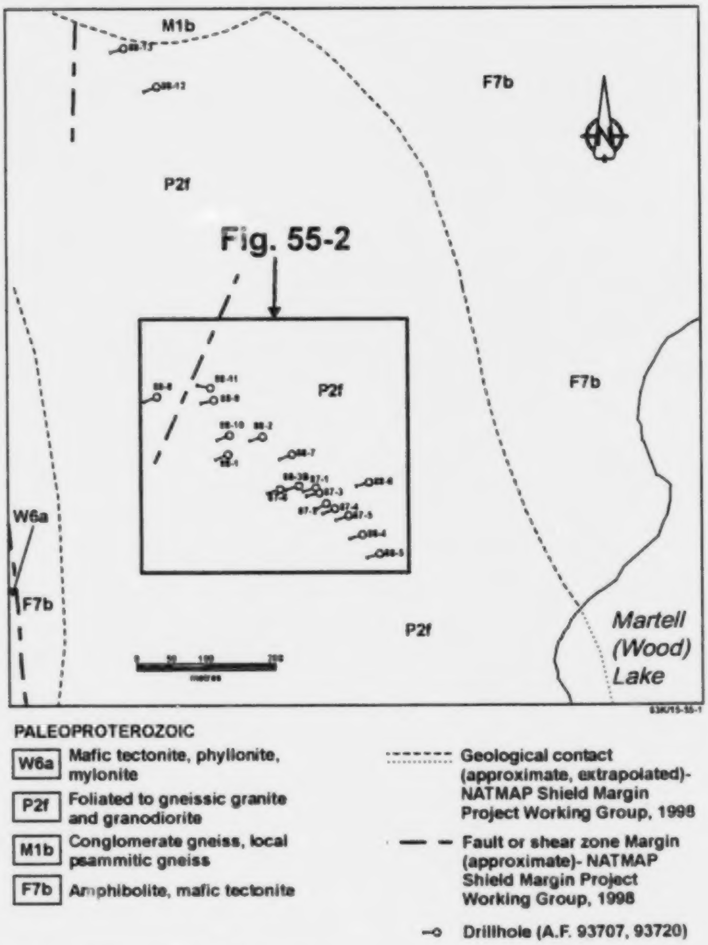

M1b
F7b
P2f
Fig. 55-2
P2f
F7b
W6a
F7b
P2f
Martell
(Wood)
Lake
0
50
100
200
metres
PALEOPROTEROZOIC
W6a Mafic tectonite, phyllonite, mylonite
P2f Foliated to gneissic granite and granodiorite
M1b Conglomerate gneiss, local psammitic gneiss
F7b Amphibolite, mafic tectonite
Geological contact (approximate, extrapolated)- NATMAP Shield Margin Project Working Group, 1998
Fault or shear zone Margin (approximate)- NATMAP Shield Margin Project Working Group, 1998
Drillhole (A.F. 93707, 93720)

Figure 55-1: Geological setting of Wood (Martell) Lake occurrence.

Trench locations are shown in Fig. 55-2. The occurrence is located within the central part of an arc related granodioritic to granitic augen gneiss (unit P9f). The gneiss is bounded to the east and west by massive to layered amphibolite (unit F7b) (Ostry, 1987). The augen gneiss contains rounded feldspar porphyroclasts. West of Martell Lake, porphyry consisting of 20% feldspar porphyroblasts to 7 mm in a fine-grained matrix makes up the least deformed part of the granodioritic sheet. Patchy potassic alteration occurs west of Martell Lake just east of the porphyritic zone (Zwanzig, 1996).

MINERALIZATION

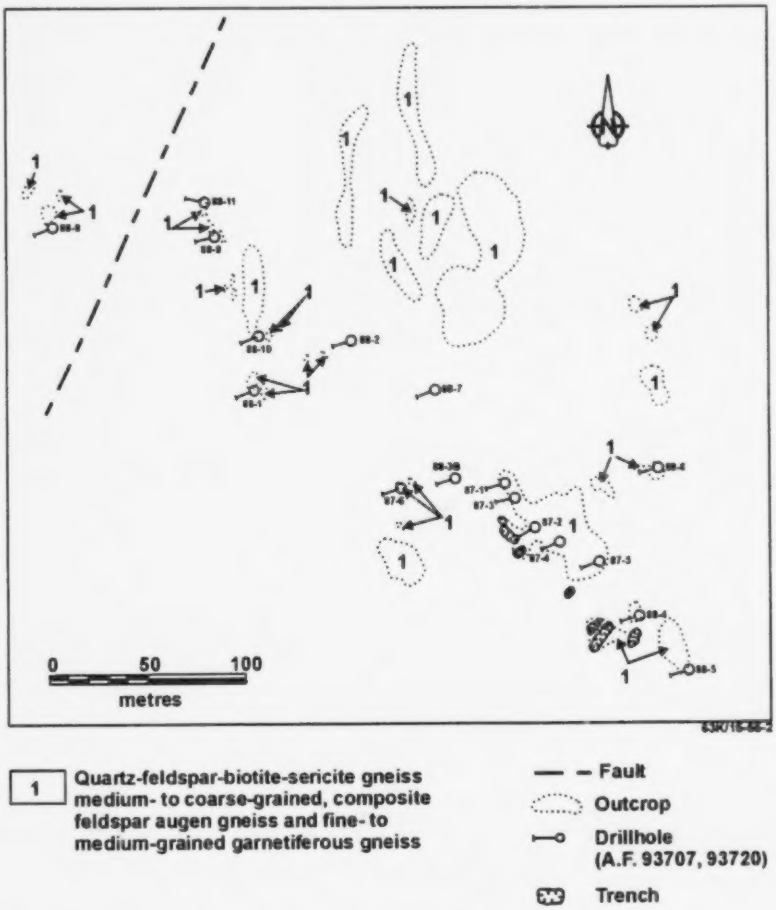
The trenches expose mineralized quartz veins along a strike length of approximately 125 m. Individual veins are <1 m thick, and they appear to form an irregular network of individual and composite veins that crosscut the gneissosity. A second vein that does not outcrop was intersected by hole 87-6 NW of the trenches (A.F. 93707). The veins exposed at surface contain abundant wallrock fragments. Arsenopyrite is the dominant sulphide in the quartz veins and occurs in a variety of habits. It is the only sulphide that is also present in the gneiss. Galena, sphalerite, pyrite, pyrrhotite, chalcopyrite and possibly gahnite are minor accessories. Patchy pink (K-feldspar?) alteration occurs at the margins of the quartz veins.

The quartz veins occupy late structural sites that postdate development of the regional gneissosity/lineation. They occupy extension fractures in pink gneiss and augen gneiss and have been affected by a post mineralization deformation event that remobilized the sulphides.

GEOCHEMICAL DATA

Noko Resources Inc. obtained anomalous geochemical values from the vein exposed in the trenches and intersected by the 1987 and 1988 drill holes (A.F. 93707, 93720). The following ranges were returned:

Au	<5 to >10 000 ppb
Ag	<0.2 to 46.0 ppm
As	5 to >10 000 ppm
Cu	<1 to 163 ppm
Ni	<1 to 86 ppm
Pb	20 to 228 ppm
Zn	<1 to 5450 ppm



1
88-11
88-9
88-10
88-2
88-1
88-7
88-3B
87-6
87-1
87-3
87-2
87-4
87-5
88-6
88-4
88-5
0
50
100
metres
63K/16-55-2
1
Quartz-feldspar-biotite-sericite gneiss medium- to coarse-grained, composite feldspar augen gneiss and fine- to medium-grained garnetiferous gneiss
Fault
Outcrop
Drillhole (A.F. 93707, 93720)
Trench

Figure 55-2: Trench and drillhole locations at Wood (Martell) Lake occurrence.

Assays returned gold values ranging from 0.104-5.000 g/t (0.003-0.146 oz./ton).

Ostry (1987) obtained the following assays from grab samples:

1.14 to 32.3 g Au/t	grab samples from four trenches
nil to 3.53 g Au/t	grab samples from other mineralized areas at the occurrence

CLASSIFICATION

Vein type deposit; stockwork.

REFERENCES

A.F. 92663 93707, and 93720; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

Gale, G.H. and Ostry, G.

1984: Stratabound gold mineralization in the Kisseynew gneiss terrain; in Manitoba Energy and Mines, Mineral Resources Division, Report of Field Activities 1987, pp. 73-80.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Ostry, G.

1987: Mineral investigations in the Kisseynew Gneiss terrain; in Manitoba Energy and Mines, Minerals Division, Report of Field Activities 1987, pp. 87-90.

Robertson, D.S.

1950: Batty Lake, Manitoba; Geological Survey of Canada, Map 1006A.

1953: Batty Lake Map-Area, Manitoba; Geological Survey of Canada, Memoir 271, 55 pp.

Zwanzig, H.V.

1996a: Geology of the Dow Lake-Martell Lake area (parts of 63K/15 and 63N/2); in Manitoba Energy and Mines, Minerals Division, Report of Activities 1996, pp. 21-28.

1996b: Geology of the Dow Lake-Martell Lake area (parts of 63K/15 and 63N/2); Cancelled Assessment File, Manitoba Energy and Mines, Preliminary Map 1996K-1, 1:20 000.

LOCATION: 56

NAME:
UTM: 378060E 6072345N
AREA: east side of Grass River near south end of Elbow Lake
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage, then traverse
AIRPHOTO: MB90025-123

EXPLORATION SUMMARY

Stockwell (1935) indicates that a small amount of trenching had been undertaken south of the Murray occurrence (Location 2, this volume). In 1973 Falconbridge Nickel Mines Limited had an airborne EM and magnetometer survey flown in the area (A.F. 91564).

Two trenches were located at this occurrence, but they appear to be fairly recent excavations that postdate Stockwell's investigations of the area.

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 56-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The occurrence is located within the massive, poorly-foliated Elbow Lake tonalite (unit P6a) (Syme, 1990, 1991), exposed along the east side of the Grass River (Fig. 56-1). Fine-grained mafic xenoliths are common within this intrusion. The Elbow Lake shear zone (Galley *et al.*, 1987, 1989; Syme, 1990, 1991, 1992) occurs approximately 200 m west of the occurrence.

The trench locations are shown in Fig. 56-2. At the occurrence the tonalite is massive, unfoliated, and consists of a medium-grained granitic rock containing 20% quartz, 15% biotite and 65% feldspar. Epidote is common as a fracture coating. The intrusion commonly contains xenoliths of foliated, fine-grained mafic rock (probably volcanic) and magnetite-bearing Fe-formation.

MINERALIZATION

Two quartz veins are exposed in trenches at the occurrence (Fig. 56-2). The main quartz vein is located at the contact of a large (>20 m) foliated mafic xenolith within the host tonalite. The milky quartz vein is up to 55 cm thick and contains up to 5% brown-weathering

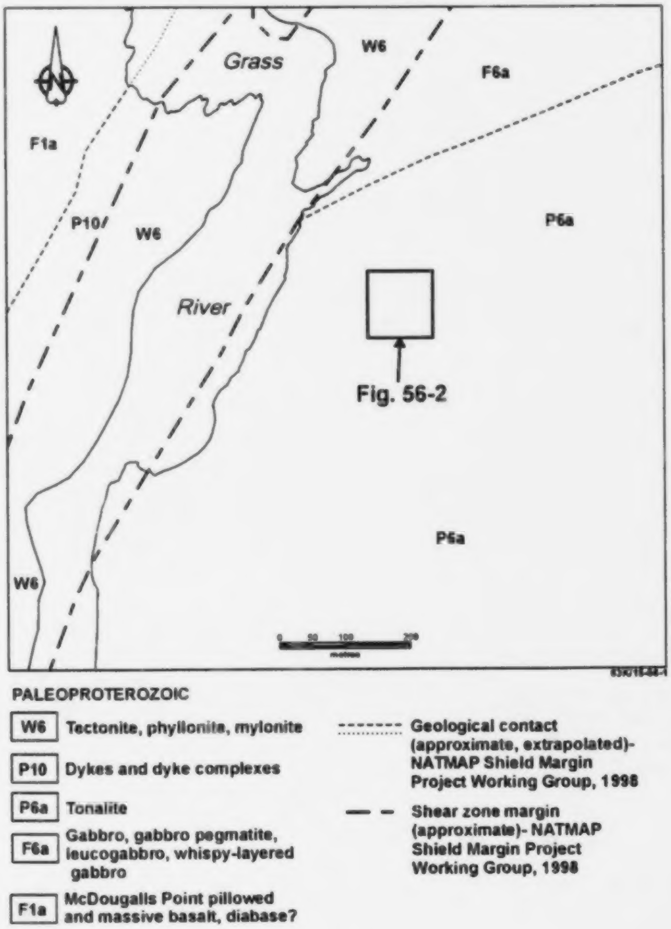

Grass
River
W6
F6a
F1a
P10
W6
P6a
Fig. 56-2
P6a
W6
0 50 100 200
metres
PALEOPROTEROZOIC
W6 Tectonite, phyllonite, mylonite
P10 Dykes and dyke complexes
P6a Tonalite
F6a Gabbro, gabbro pegmatite, leucogabbro, whispy-layered gabbro
F1a McDougalls Point pillowed and massive basalt, diabase?
Geological contact (approximate, extrapolated)- NATMAP Shield Margin Project Working Group, 1998
Shear zone margin (approximate)- NATMAP Shield Margin Project Working Group, 1998

Figure 56-1: Geological setting of Murray South occurrence.

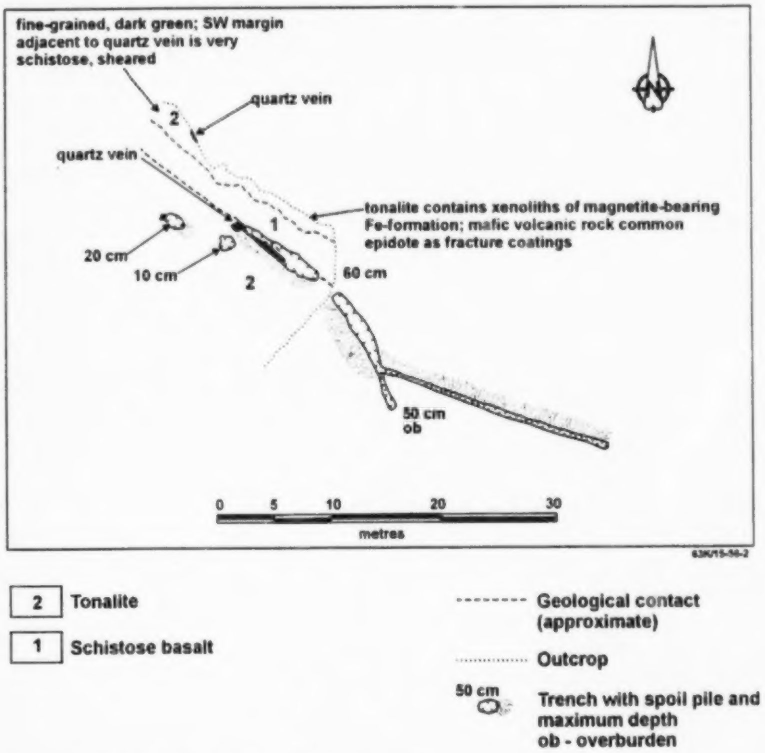

fine-grained, dark green; SW margin adjacent to quartz vein is very schistose, sheared
quartz vein
quartz vein
2
1
2
tonalite contains xenoliths of magnetite-bearing Fe-formation; mafic volcanic rock common epidote as fracture coatings
20 cm
10 cm
60 cm
50 cm
ob
N
0
5
10
20
30
metres
63K/15-56-2
2 Tonalite
1 Schistose basalt
Geological contact (approximate)
Outcrop
50 cm
Trench with spoil pile and maximum depth
ob - overburden

Figure 56-2: Geology and trench locations at Murray South occurrence.

carbonate. No sulphides were noted in the quartz. A white phyllosilicate (muscovite?) occurs as a fracture coating in the quartz. Tonalite and chloritic mafic fragments are common constituents of the vein.

The second vein, approximately 20 cm thick, is also located at the margin of a mafic block. It is exposed over a strike length of less than a metre.

GEOCHEMICAL DATA

No assays have been reported for this occurrence.

CLASSIFICATION

Vein type deposit; multiple veins or lenses.

REFERENCES

A.F. 91564; Cancelled Assessment File, Manitoba Industry, Trade and Mines, Minerals Division.

Galley, A.G., Ames, D.E. and Franklin, J.M.

1987: Geological setting of gold mineralization in the Elbow Lake region, Manitoba; in Manitoba Energy and Mines, Minerals Division, Report of Field Activities, 1987, pp.175-177.

1989: Results of studies on the gold metallogeny of the Flin Flon belt; in Investigations by the Geological Survey of Canada in Manitoba and Saskatchewan during the 1984-1989 Mineral Development Agreements, Geological Survey of Canada, Open File 2133, pp.25-32.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Stockwell, C.H.

1935: Gold Deposits of the Elbow-Morton Area, Northern Manitoba; Geological Survey of Canada, Memoir 186, 74pp.

Syme, E.C.

1990: Elbow Lake project (part of NTS 63K/15W); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1990, pp.49-57.

1991: Elbow Lake project - Part A: supracrustal rocks and structural setting; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1991, pp.14-27.

1992: Elbow Lake Project - Part A: Supracrustal rocks; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1992, pp.32-46.

LOCATION: 57

NAME: Koscielny Lake
UTM: 374090E, 6094935N
AREA: near NE end of lake approximately 2.7 km NE of King Lake, at the north end of Koscielny Lake
ACCESS: via bush plane
AIRPHOTO: MB90025-191

EXPLORATION SUMMARY

Several quartz veins occur in the eastern area of Koscielny Lake (Fig. 57-1). This vein has been trenched at a number of locations (A.F. 90520) (Fig. 57-2) and, apparently, some encouraging gold values were obtained. The vein was further evaluated by 24 shallow (maximum 50 m (165 ft.), but most less than 15 m (50 ft.)) drill holes (Fig. 57-2) by A.L. Parres in 1950 (A.F. 90520). Schledewitz (1993b) indicates a sulphide (pyrite, pyrrhotite and minor chalcopyrite) occurrence in this area.

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 57-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). Schledewitz (1993a, b) indicates the area is underlain by hornblende-plagioclase-phyric volcaniclastic rocks with abundant hornblende-plagioclase and plagioclase-phyric intermediate dykes and sills (unit P10a). This sequence has been intruded by well foliated, medium- to coarse-grained gabbro (unit P2a) and quartz-phyric biotite-hornblende tonalite to quartz diorite (unit P6d) of the Webb Lake plutonic complex.

MINERALIZATION

Trench and drill hole locations are shown in Fig. 57-2. The lithologic descriptions of the drill core suggest the vein is hosted dominantly by well foliated medium- to coarse-grained gabbro. Lesser quantities of mafic volcanic rocks and magnetite bearing Fe-formation were also intersected. Thin quartz veins appear to be fairly common in this sequence.

Mineralized quartz containing pyrite and visible gold (V.G. in the lithologic descriptions) was intersected in the following holes (A.F. 90520):

No. 5	3.7-4.0 m (12-13 ft.)
No. 6	11.1-11.8 m (36.5-38.7 ft.)
No. 7	12.5-13.7 m (41.0-45.0 ft.)
No. 9	4.6-6.1 m (15.0-20.0 ft.)
No. 14	5.8-7.6 m (19.0-25.0 ft.)
No. 17	2.7-4.0 m (9.0-13.0 ft.)

GEOCHEMICAL DATA

No assay results have been reported for this occurrence.

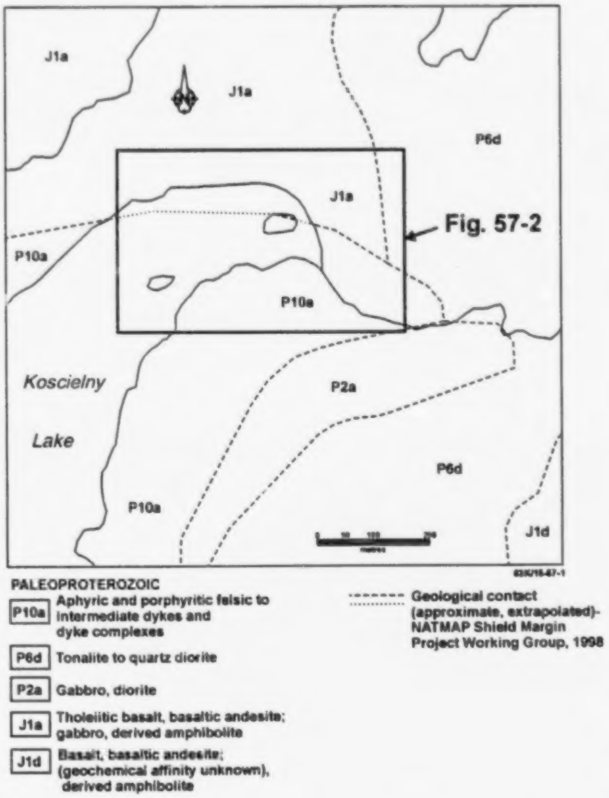

J1a
J1a
P6d
J1a
Fig. 57-2
P10a
P10a
Koscielny
Lake
P2a
P6d
P10a
J1d
0
50
100
200
metres
PALEOPROTEROZOIC
P10a
Aphyric and porphyritic felsic to intermediate dykes and dyke complexes
P6d
Tonalite to quartz diorite
P2a
Gabbro, diorite
J1a
Tholeiitic basalt, basaltic andesite; gabbro, derived amphibolite
J1d
Basalt, basaltic andesite; (geochemical affinity unknown), derived amphibolite
Geological contact (approximate, extrapolated)- NATMAP Shield Margin Project Working Group, 1998

Figure 57-1: Geological setting of occurrence 57.

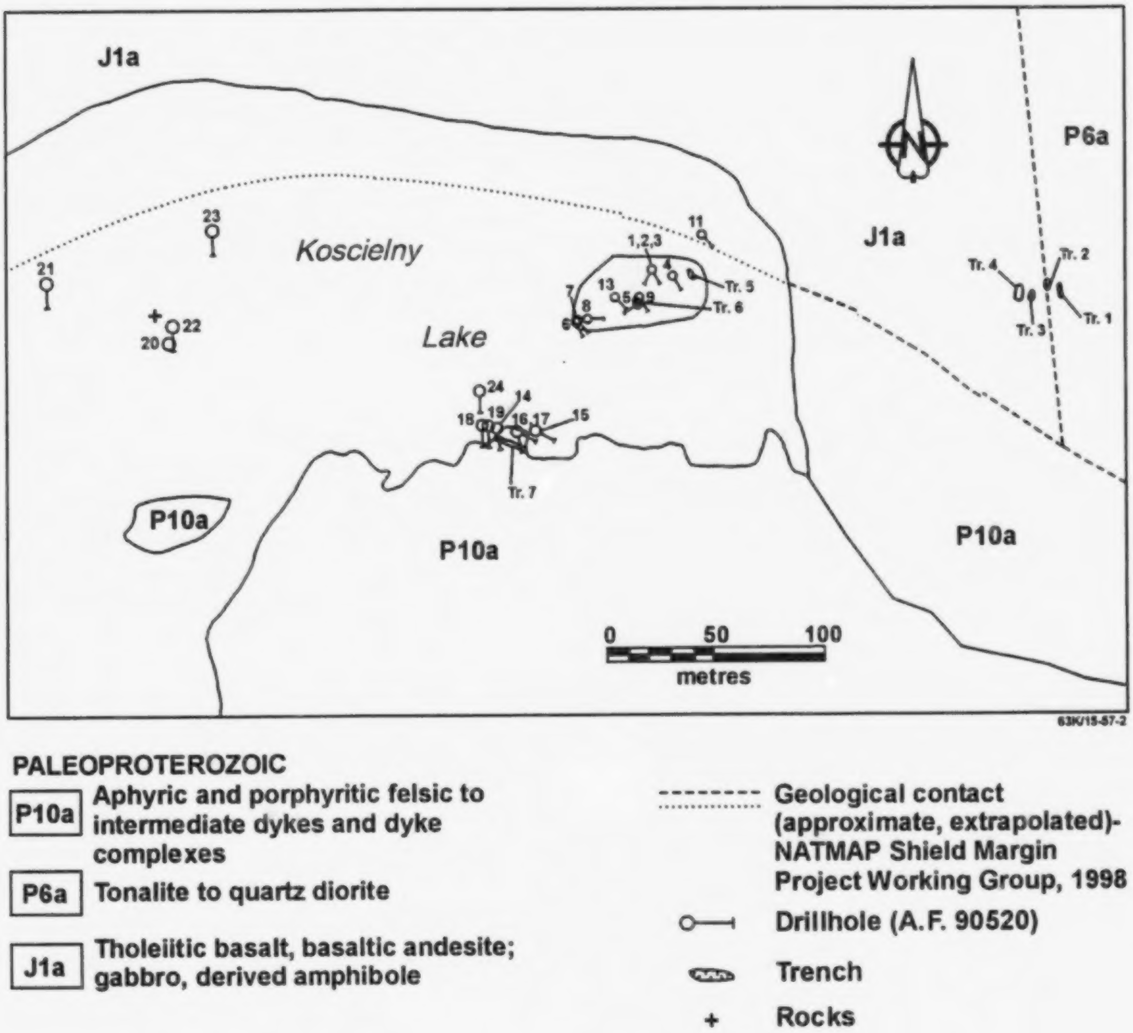

J1a
P6a
Koscielny
Lake
J1a
P10a
P10a
P10a
21
23
22
20
11
1,2,3
4
13
5
9
7
8
6
24
14
18
19
16
17
15
Tr. 1
Tr. 2
Tr. 3
Tr. 4
Tr. 5
Tr. 6
Tr. 7
0
50
100
metres
63K/15-57-2
PALEOPROTEROZOIC
P10a Aphyric and porphyritic felsic to intermediate dykes and dyke complexes
P6a Tonalite to quartz diorite
J1a Tholeiitic basalt, basaltic andesite; gabbro, derived amphibole
Geological contact (approximate, extrapolated)- NATMAP Shield Margin Project Working Group, 1998
Drillhole (A.F. 90520)
Trench
Rocks

Figure 57-2: Drillhole and trench locations at occurrence 57.

CLASSIFICATION

Vein type deposit; single vein (?) at each location.

REFERENCES

A.F. 90520: Cancelled Assessment File, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Schledewitz, D.C.P.

1993a: Geology of the Webb Lake-Fay Lake area (NTS 63K/14NE and 63K/15NW); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1993, pp. 29-32.

1993b: Webb Lake-Fay Lake (east half); Manitoba Energy and Mines, Minerals Division, Preliminary Map 1993-K4 (NTS 63K/15NW), 1:20 000.

LOCATION: 58

NAME: mineralization intersected by diamond drilling
UTM: 384475E, 6089830N
AREA: approximately 900 m S of Muhekun Lake, near north end of Sexton (Hasset) Lake (unofficial names)
ACCESS: via bush plane, then traverse
AIRPHOTO: MB90025-25

EXPLORATION SUMMARY

Prospectors Airways Company, Ltd. excavated 2 trenches and drilled 4 holes at the occurrence in 1957 (A.F. 90519). In 1971 an HLEM (Ronka) and ground magnetometer survey was performed for Straus Exploration Inc. over the occurrence area (A.F. 90514).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 58-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). Schledewitz (1993a, b) indicates the area is underlain by dark green, aphyric, pillowed mafic flows, but the NATMAP compilation indicates that the sequence consists of mafic gneiss (unit U1b) and medium- to coarse-grained, equigranular biotite granodiorite±hornblende (unit P7b) of the Gauthier Lake pluton.

The lithologic descriptions for the drill core from holes Packsack #7 and #9 indicate that the sequence at the occurrence is dominated by basalt ("andesite" in the lithologic descriptions) with minor feldspar-phyric intervals (A.F. 90519).

MINERALIZATION

"Massive pyrite and pyrrhotite" (A.F. 90519) were intersected over the following intervals:

Hole Packsack #7	16.5-17.4 m (54.0-57.0 ft.)
Hole Packsack #9	10.7-11.9 m (35.0-39.0 ft.)

GEOCHEMICAL DATA

The mineralized intervals were sampled, but no assays are reported in the assessment file.

CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation. Graphitic intervals are present in this sequence.

REFERENCES

A.F. 90514, 90519, 91536, 93052; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Schledewitz, D.C.P.

1993a: Geology of the Webb Lake-Fay Lake area (NTS 63K/14NE and 63K/15NW); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1993, pp. 29-32.

1993b: Webb Lake-Fay Lake (east half); Manitoba Energy and Mines, Minerals Division, Preliminary Map 1993-K4 (NTS 63K/15NW), 1:20 000.

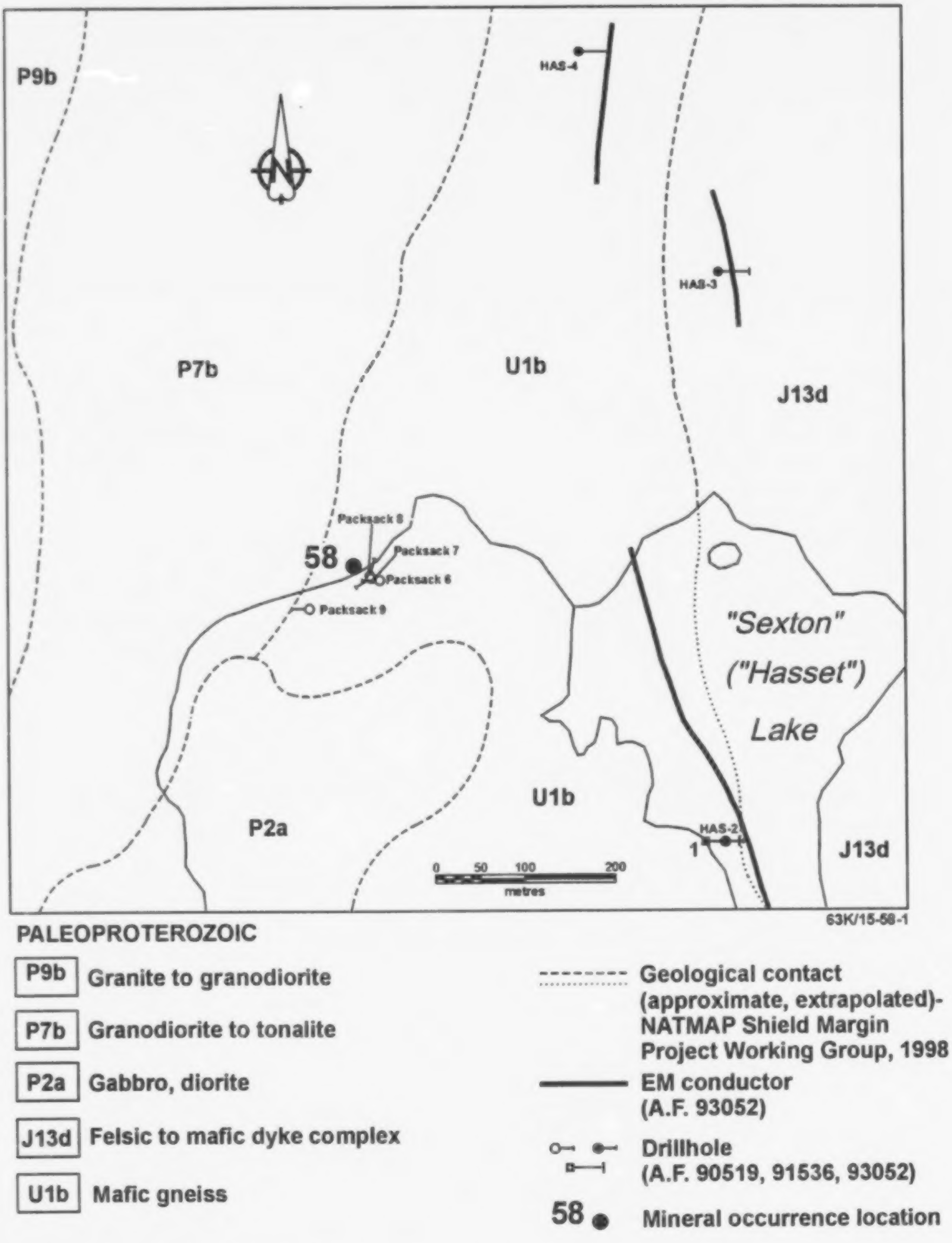

P9b
HAS-4
P7b
U1b
J13d
HAS-3
Packsack 8
58
Packsack 7
Packsack 6
Packsack 9
"Sexton"
("Hasset")
Lake
P2a
U1b
HAS-2
1
J13d
0 50 100 200
metres
63K/15-58-1
PALEOPROTEROZOIC
P9b Granite to granodiorite
P7b Granodiorite to tonalite
P2a Gabbro, diorite
J13d Felsic to mafic dyke complex
U1b Mafic gneiss
Geological contact (approximate, extrapolated)-NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 93052)
Drillhole (A.F. 90519, 91536, 93052)
58 Mineral occurrence location

Figure 58-1: Geological setting of occurrence 58.

LOCATION: 59

NAME: mineralization intersected by diamond drilling
UTM: 384880E, 6089195N
AREA: under west side of Sexton (Hasset) Lake (unofficial names), approximately 1.7 km SSE of Muhekun Lake
ACCESS: via bush plane
AIRPHOTO: MB90025-25

EXPLORATION SUMMARY

This occurrence has been described in Mineral Inventory File 792. In 1971 an HLEM (Ronka) and ground magnetometer survey was performed for Straus Exploration Inc. over the occurrence area (A.F. 90514) and three holes were completed in 1971 and 1972 (A.F. 90515, 91536).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 59-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). Schledewitz (1993a, b) indicated the area is underlain by dark green, aphyric, pillowed mafic flows, but the NATMAP compilation indicates that the area is underlain by mafic gneiss (unit U1b). To the east of the occurrence the sequence consists of hornblende-plagioclase-phyric volcaniclastic rocks with abundant hornblende-plagioclase and plagioclase-phyric intermediate dykes and sills (unit J13d). This sequence has been intruded to the west by well foliated, medium- to coarse-grained gabbro (unit P2a).

The lithologic descriptions for the drill core indicate that the sequence at the occurrence is dominated by basalt ("andesite" in the lithologic descriptions) with feldspar-phyric ("felsite") intervals.

MINERALIZATION

Hole #1 intersected "near massive sulphides" over the interval 25.0-32.3 m (82.0-106.0 ft.) (A.F. 91536). Holes 2A and 3A also intersected sulphide-rich units over the intervals 63.4-66.8 m (208.0-219.0 ft.) and 43.3-46.0 m (142.0-151.0 ft.) respectively. The sulphides consist of pyrite and minor pyrrhotite with occasional chalcopyrite grains.

GEOCHEMICAL DATA

The following assays were obtained from mineralized intervals (A.F. 90515, 91536) (see table below).

Hole No.	Interval	%Cu	%Zn	%Ni	g Au/t (oz. Au/ton)	g Ag/t (oz. Ag/ton)
#1	9.4-10.4 m (31.0-34.0 ft.)				0.34 (0.01)	1.37 (0.04)
	20.7-22.3 m (68.0-73.0 ft.)				0.34 (0.01)	2.74 (0.08)
	25.0-29.3 m (82.0-96.0 ft.)	0.02	tr	0.02	tr	1.37 (0.04)
	29.3-32.3 m (96.0-106.0 ft.)	0.02	tr	0.03	0.34 (0.01)	1.37 (0.04)
#2A	63.4-64.0 m (208.0-210.0 ft.)	0.03	0.05	n/d	tr	2.06 (0.06)
	64.0-64.5 m (210.0-211.7 ft.)	0.12	0.08	n/d	(0.01)	5.48 (0.16)
	64.5-64.6 m (211.7-211.9 ft.)	0.45	n/d	n/d	n/d	n/d
	64.6-66.1 m (211.9-216.9 ft.)	0.12	0.11	n/d	n/d	n/d
	66.1-66.7 m (216.9-218.7 ft.)	0.03	0.01	n/d	(0.01)	1.37 (0.04)
	72.7-74.2 m (238.5-243.5 ft.)	0.02	0.06	n/d	(0.01)	tr
	74.2-75.3 m (243.5-247.0 ft.)	0.03	0.07	n/d	(0.01)	1.37 (0.04)
#3A	43.9-45.7 m (144.0-150.0 ft.)	0.05	0.03	n/d	tr	nil

CLASSIFICATION

Chemical sediment type deposit; sulphide facies iron formation. Within volcanic sequence possibly at mafic to felsic rock transition.

REFERENCES

A.F. 90514, 90515, 90519, 91536 and 93052; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

Mineral Inventory File 792

Manitoba Department of Energy and Mines

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Schledewitz, D.C.P.

1993a: Geology of the Webb Lake-Fay Lake area (NTS 63K/14NE and 63K/15NW); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1993, pp. 29-32.

1993b: Webb Lake-Fay Lake (east half); Manitoba Energy and Mines, Minerals Division, Preliminary Map 1993-K4 (NTS 63K/15NW), 1:20 000.

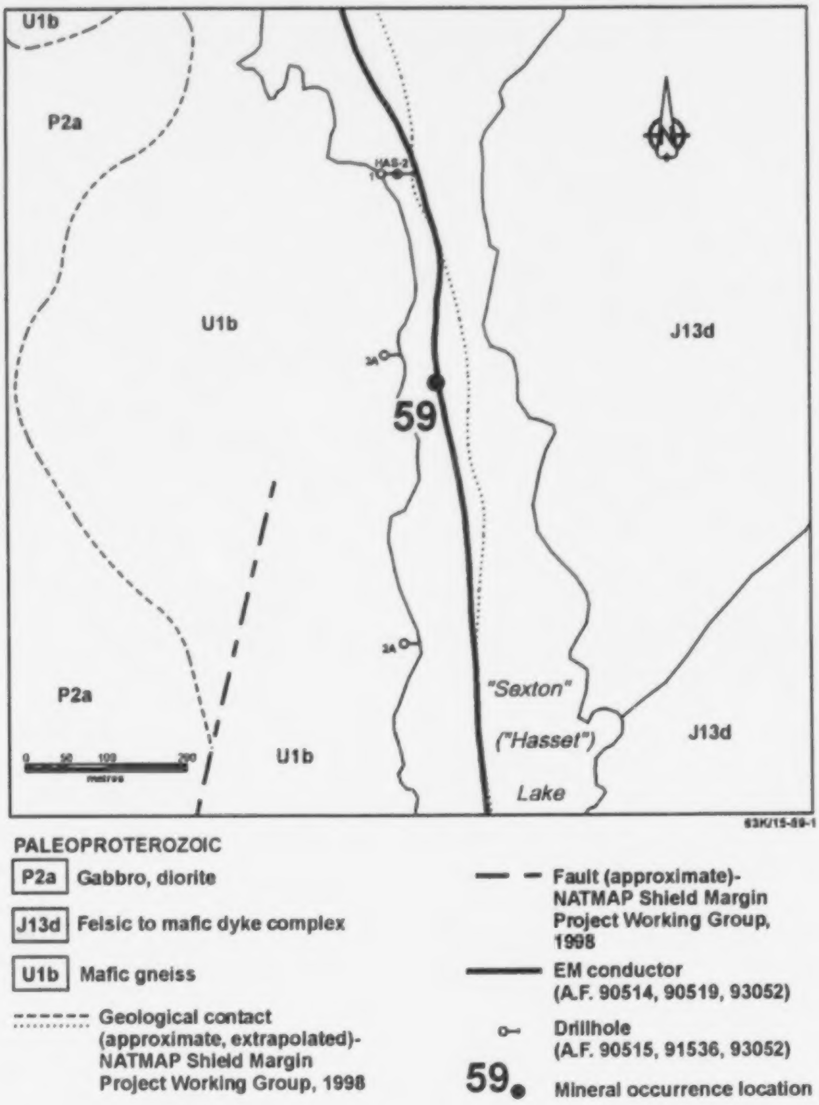

U1b
P2a
HAS-2
1
U1b
J13d
3A
59
2A
P2a
"Sexton"
("Hasset")
Lake
J13d
U1b
0 50 100 200
metres
63K/15-59-1
PALEOPROTEROZOIC
P2a Gabbro, diorite
J13d Felsic to mafic dyke complex
U1b Mafic gneiss
Geological contact (approximate, extrapolated)- NATMAP Shield Margin Project Working Group, 1998
Fault (approximate)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 90514, 90519, 93052)
Drillhole (A.F. 90515, 91536, 93052)
59 Mineral occurrence location

Figure 59-1: Geological setting of occurrence 59.

LOCATION: 60

NAME: mineralization intersected by diamond drilling
UTM: 385510E, 6089525N
AREA: east of Sexton (Hasset) Lake (unofficial names) south of Muhekun Lake, approximately 0.5 km E of east shoreline
ACCESS: via bush plane, then traverse
AIRPHOTO: MB90025-25

EXPLORATION SUMMARY

In 1971 Noranda Exploration Company, Ltd. performed HLEM (Ronka Mk. III) surveys in the area. Some of the conductive responses were subsequently drilled by Manitoba Mineral Resources, Ltd. (A.F. 90643, 92654).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 60-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). Schledewitz (1993a, b) indicates that the area is underlain by hornblende-plagioclase-phyric volcaniclastic rocks with abundant hornblende-plagioclase and plagioclase-phyric intermediate dykes and sills (grouped under unit J13d). The Gants Lake batholith, consisting of coarse-grained, plagioclase-phyric to equigranular, hornblende-biotite granodiorite to quartz diorite (unit P7b), occurs to the east.

The lithologic description of the drill core indicates that the sequence at the occurrence is dominated by hornblende granodiorite and schistose equivalents, with rhyolitic and minor andesitic tuffs appearing in the western part of the stratigraphy.

MINERALIZATION

Hole E-17 intersected several sulphide-rich (up to 70%) intervals hosted by felsic tuffs (A.F. 90643, 92654). Pyrite is the dominant sulphide with somewhat lesser pyrrhotite. Chalcopyrite and sphalerite are minor constituents.

GEOCHEMICAL DATA

The following assays were obtained from mineralized intervals sampled in drill hole E-17 (A.F. 90643, 92654):

Interval	%Cu	%Zn	Au
25.8-26.2 m (84.8-85.9 ft.)	0.04	0.95	tr
26.2-27.7 m (85.9-90.8 ft.)	0.07	0.17	tr
30.4-31.2 m (99.9-102.4 ft.)	0.05	0.08	tr

CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation. Within volcaniclastic sequence at contact with Gants Lake batholith.

REFERENCES

A.F. 90515, 90643, 91536, 92654, 93052; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Schledewitz, D.C.P.

1993a: Geology of the Webb Lake-Fay Lake area (NTS 63K/14NE and 63K/15NW); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1993, pp. 29-32.

1993b: Webb Lake-Fay Lake (east half); Manitoba Energy and Mines, Minerals Division, Preliminary Map 1993-K4 (NTS 63K/15NW), 1:20 000.

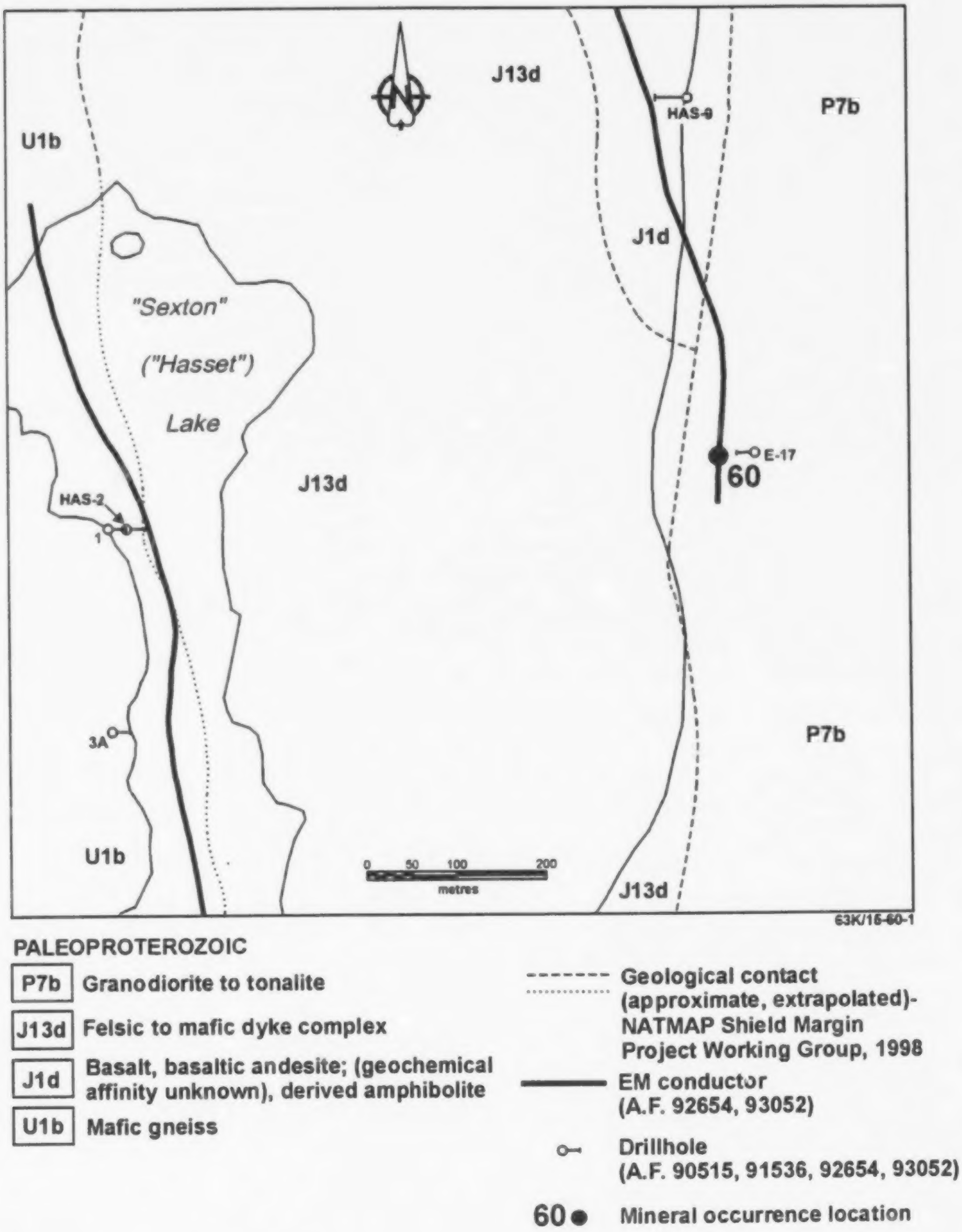

J13d
P7b
U1b
N
HAS-9
J1d
"Sexton"
("Hasset")
Lake
E-17
60
J13d
HAS-2
1
3A
P7b
U1b
0 50 100 200
metres
J13d
63K/16-60-1
PALEOPROTEROZOIC
P7b Granodiorite to tonalite
J13d Felsic to mafic dyke complex
J1d Basalt, basaltic andesite; (geochemical affinity unknown), derived amphibolite
U1b Mafic gneiss
Geological contact (approximate, extrapolated)-NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 92654, 93052)
Drillhole (A.F. 90515, 91536, 92654, 93052)
60 ● Mineral occurrence location

Figure 60-1: Geological setting of occurrence 60.

LOCATION: 61

NAME: mineralization intersected by diamond drilling
UTM: 385350E, 6088965N
AREA: east of Sexton (Hasset) Lake (unofficial names) south of Muhekun Lake, approximately 0.3 km E of east shoreline
ACCESS: via bush plane, then traverse
AIRPHOTO: MB90025-25

EXPLORATION SUMMARY

In 1971 Noranda Exploration Company, Ltd. performed HLEM (Ronka Mk. III) surveys in the area. Some of the conductive responses were subsequently drilled by Manitoba Mineral Resources, Ltd. (A.F. 90643, 92654).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 61-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). Schledewitz (1993a, b) indicates that the area is underlain by hornblende-plagioclase-phyric volcaniclastic rocks with abundant hornblende-plagioclase and plagioclase-phyric intermediate dykes and sills (unit J13d). The Gants Lake batholith, consisting of coarse-grained, plagioclase-phyric to equigranular, hornblende-biotite granodiorite to quartz diorite (unit P7b), occurs to the east.

The lithologic description of the drill core indicates that the sequence at the occurrence is dominated by mafic and felsic "tuffs" (A.F. 90643, 92654).

MINERALIZATION

Two intervals containing up to 90% "near massive" sulphides were intersected by hole E-16 within the "tuffaceous" sequence (A.F. 90643, 92654). The character of the sulphides is not described, but pyrite is dominant with lesser pyrrhotite.

GEOCHEMICAL DATA

The following assays were obtained from mineralized intervals sampled in drill hole E-16 (A.F. 90643, 92654):

Interval	%Cu	%Zn	Au
24.7-24.9 m (81.0-81.7 ft.)	0.06	0.22	tr
25.1-25.8 m (82.5-84.7 ft.)	0.04	0.19	nil
82.4-82.9 m (270.0-272.1 ft.)	0.06	0.03	tr

CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation.

REFERENCES

A.F. 90515, 90643, 92654, 93052; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Schledewitz, D.C.P.

1993a: Geology of the Webb Lake-Fay Lake area (NTS 63K/14NE and 63K/15NW); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1993, pp. 29-32.

1993b: Webb Lake-Fay Lake (east half); Manitoba Energy and Mines, Minerals Division, Preliminary Map 1993-K4 (NTS 63K/15NW), 1:20 000.

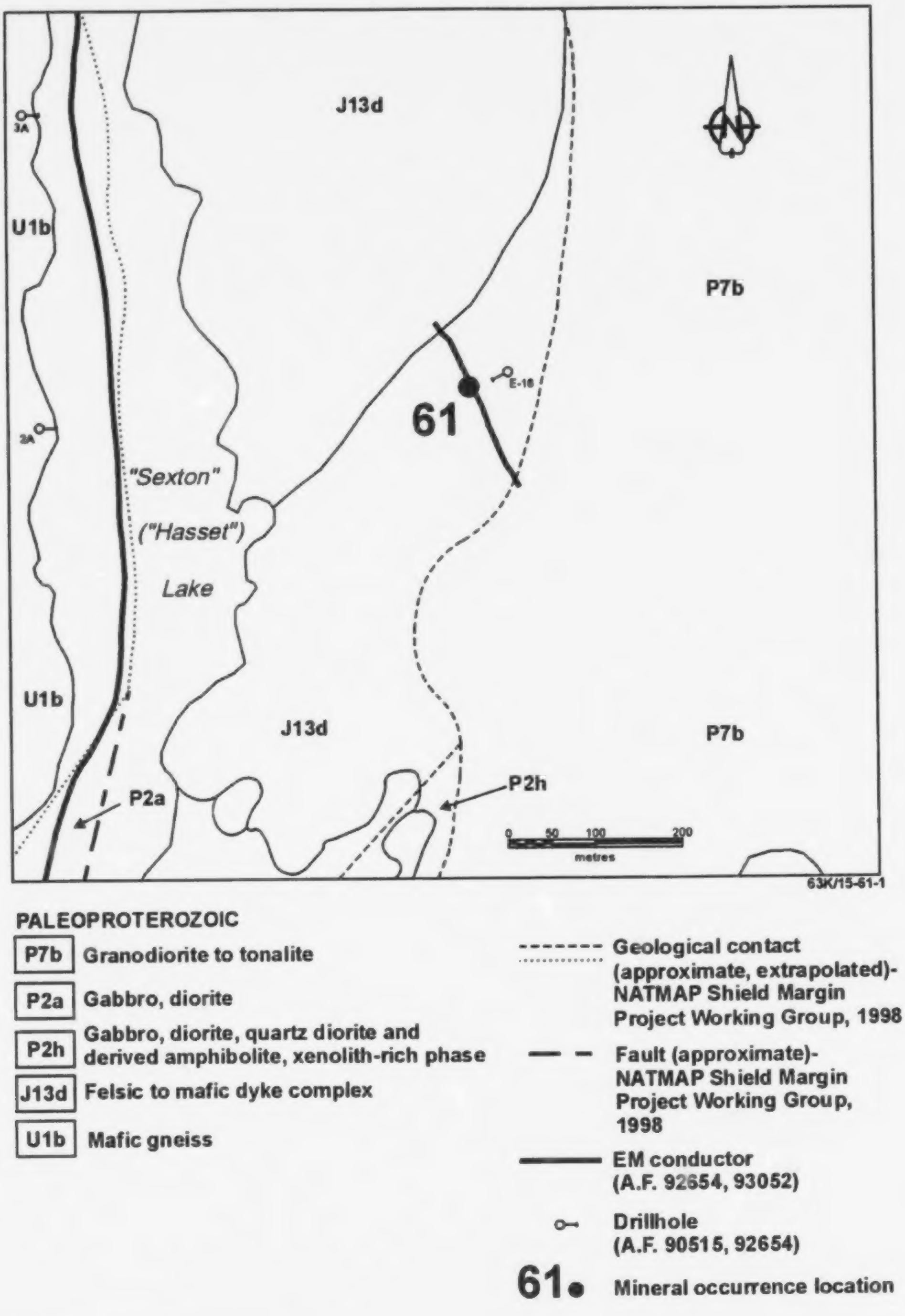

J13d
U1b
P7b
3A
3A
E-10
61
"Sexton"
("Hasset")
Lake
U1b
J13d
P7b
P2h
P2a
0 50 100 200
metres
63K/15-61-1
PALEOPROTEROZOIC
P7b Granodiorite to tonalite
P2a Gabbro, diorite
P2h Gabbro, diorite, quartz diorite and derived amphibolite, xenolith-rich phase
J13d Felsic to mafic dyke complex
U1b Mafic gneiss
Geological contact (approximate, extrapolated)- NATMAP Shield Margin Project Working Group, 1998
Fault (approximate)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 92654, 93052)
Drillhole (A.F. 90515, 92654)
61● Mineral occurrence location

Figure 61-1: Geological setting of occurrence 61.

LOCATION: 62

NAME: mineralization intersected by diamond drilling
UTM: 383205E, 6087390N
AREA: west of Sexton (Hasset) Lake (unofficial names) south of Muhekun Lake, approximately 750 m W of west shoreline
ACCESS: via bush plane, then traverse
AIRPHOTO: MB90025-58

EXPLORATION SUMMARY

In 1971 Noranda Exploration Company, Ltd. performed HLEM (Ronka Mk. III) surveys in the area. Some of the conductive responses were subsequently drilled by Manitoba Mineral Resources, Ltd. (A.F. 90643, 92654).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 62-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). Schledewitz (1993a, b) indicates that the area is underlain by well foliated, medium- to coarse-grained gabbro (unit P2a) and fine-grained plagioclase-phyric diabase. Dark green, aphyric, pillowed, mafic flows and a diabase dyke complex (unit P2f) occur to the SE of the occurrence.

The lithologic description for hole E-15 suggests the sequence at the occurrence consists of schistose rhyolites and aphyric and feldspar-phyric amphibolites (A.F. 90643, 92654). Several units are described as being tuffaceous, but their layered character may be tectonic rather than depositional.

MINERALIZATION

The main mineralized interval intersected in hole E-15 occurs between 24.3 and 37.6 m (79.8 and 123.3 ft.) (A.F. 90643, 92654). It is a graphitic interval with up to 25% pyrite, and contains narrow intervals of nearly massive sulphides. Pyrite is the dominant sulphide with lesser pyrrhotite. Several thin, sulphide-bearing intervals occur higher in the hole.

GEOCHEMICAL DATA

The following assays were obtained from mineralized intervals sampled in drill hole E-15 (A.F. 90643, 92654) (see table below).

Interval	%Cu	%Zn	Au
17.8-18.3 m (58.5-59.9 ft.)	0.10	0.04	nil
22.3-23.0 m (73.2-75.5 ft.)	0.09	0.02	tr
23.0-24.0 m (75.5-78.6 ft.)	0.06	tr	tr
24.3-25.9 m (79.8-85.0 ft.)	0.05	0.03	0.34 g Au/t (0.01 oz. Au/ton)
25.9-27.4 m (85.0-90.0 ft.)	0.03	0.07	tr
27.4-29.0 m (90.0-95.0 ft.)	0.04	0.02	tr
29.0-30.5 m (95.0-100.0 ft.)	0.05	0.12	tr
30.5-32.0 m (100.0-105.0 ft.)	0.07	0.16	nil
32.0-33.5 m (105.0-110.0 ft.)	0.03	0.07	tr
33.5-34.3 m (110.0-112.6 ft.)	0.08	0.28	tr
35.1-36.8 m (115.0-120.7 ft.)	0.03	0.05	tr
37.2-37.6 m (121.9-123.4 ft.)	0.05	0.03	tr

CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation. Graphite is intimately associated with the sulphides.

REFERENCES

A.F. 90643, 92654; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Schledewitz, D.C.P.

1993a: Geology of the Webb Lake-Fay Lake area (NTS 63K/14NE and 63K/15NW); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1993, pp. 29-32.

1993b: Webb Lake-Fay Lake (east half); Manitoba Energy and Mines, Minerals Division, Preliminary Map 1993-K4 (NTS 63K/15NW), 1:20 000.

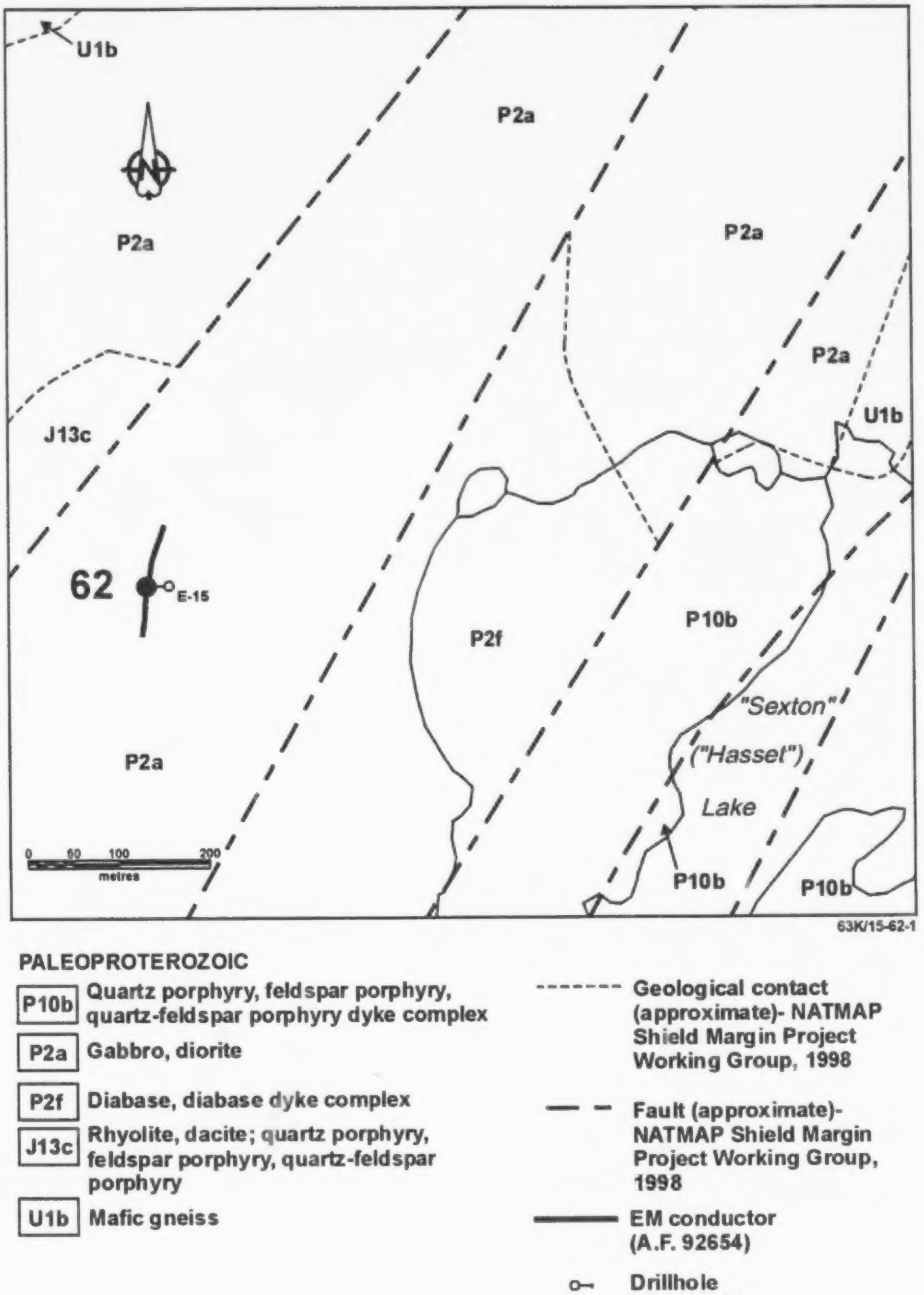

U1b
P2a
P2a
P2a
P2a
U1b
J13c
62
E-15
P2f
P10b
"Sexton"
("Hasset")
Lake
P2a
0 50 100 200
metres
P10b
P10b
63K/15-62-1
PALEOPROTEROZOIC
P10b Quartz porphyry, feldspar porphyry, quartz-feldspar porphyry dyke complex
P2a Gabbro, diorite
P2f Diabase, diabase dyke complex
J13c Rhyolite, dacite; quartz porphyry, feldspar porphyry, quartz-feldspar porphyry
U1b Mafic gneiss
Geological contact (approximate)- NATMAP Shield Margin Project Working Group, 1998
Fault (approximate)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 92654)
Drillhole (A.F. 92654)
62 Mineral occurrence location

Figure 62-1: Geological setting of occurrence 62.

LOCATION: 63

NAME: mineralization intersected by diamond drilling
UTM: 382970E, 6087205N
AREA: west of Sexton (Hasset) Lake (unofficial names) south of Muhekun Lake, approximately 800 m W of west shoreline
ACCESS: via bush plane, then traverse
AIRPHOTO: MB90025-58

EXPLORATION SUMMARY

In 1971 Noranda Exploration Company, Ltd. performed HLEM (Ronka Mk. III) surveys in the area. Some of the conductive responses were subsequently drilled by Manitoba Mineral Resources, Ltd. (A.F. 90643, 92654).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 63-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). Schledewitz (1993a, b) indicates that the area is underlain by fine-grained plagioclase-phyric diabase, oikocrystic diabase and diabase pegmatite (grouped under unit P2a). Quartz-phyric rhyodacite and hornblende-plagioclase-phyric volcaniclastic rocks with abundant hornblende-plagioclase and plagioclase-phyric intermediate dykes and sills (unit J13c) occur to the NW of the occurrence.

The lithologic description for hole E-13 describes a sequence dominated by calcareous and sericitic chlorite-hornblende-feldspar schist with a variably schistose amphibole-phyric mafic rock (diabase?) (A.F. 90643, 92654). Hole E-14 is dominated by "andesite (and) rhyolite tuffs" (A.F. 90643). The description is not clear enough to ascertain if these rocks are tuffs or banded schists similar to the sequence intersected in the previous hole.

MINERALIZATION

Hole E-13 contains two sulphide-bearing intervals from 31.1-50.0 m (102.0 to 163.9 ft.) and 66.1-68.7 m (216.8 to 225.3 ft.) (A.F. 90643, 92654). Their sulphide content is generally fairly low, 1-5%, and is dominated by pyrite with lesser pyrrhotite. Minor quantities of chalcopyrite and sphalerite were noted. Hole E-14 intersected several thin intervals containing up to 80% sulphides (A.F. 90643, 92654). These are also dominated by pyrite with lesser chalcopyrite. Graphite is present in one interval.

GEOCHEMICAL DATA

The following assays were obtained from mineralized intervals sampled in drill holes E-13 and E-14 (A.F. 90643, 92654) (see table below).

	Interval	%Cu	%Zn	Au
Hole E-13	35.8-36.1 m (117.3-118.3 ft.)	0.07	0.03	tr
	36.6-37.1 m (120.0-121.8 ft.)	0.04	0.34	nil
	38.1-38.5 m (125.0-126.4 ft.)	0.03	0.02	tr
	42.9-43.5 m (140.6-142.8 ft.)	0.04	0.08	nil
	43.8-44.9 m (143.7-147.2 ft.)	0.12	0.16	tr
	45.1-45.7 m (148.0-150.0 ft.)	0.03	0.05	0.34 g Au/t (0.01 oz. Au/ton)
	47.2-47.8 m (155.0-156.8 ft.)	0.13	0.04	tr
	48.2-49.5 m (158.3-162.4 ft.)	0.05	0.10	tr
	49.5-50.0 m (162.4-163.9 ft.)	0.08	1.44	0.68 g Au/t (0.02 oz. Au/ton)
	66.1-66.5 m (216.8-218.1 ft.)	0.05	0.29	nil
	66.6-68.0 m (218.5-223.1 ft.)	0.06	0.21	tr
Hole E-14	41.8-42.1 m (137.2-138.1 ft.)	0.04	0.19	tr
	42.1-43.3 m (138.1-142.0 ft.)	0.03	0.09	tr
	43.8-44.0 m (143.8-144.5 ft.)	0.03	0.05	nil
	44.3-44.6 m (145.4-146.4 ft.)	0.05	0.04	tr
	48.4-48.8 m (158.9-160.0 ft.)	0.11	0.16	tr
	48.8-49.3 m (160.0-161.6 ft.)	0.03	0.15	tr
	49.6-50.6 m (162.6-166.1 ft.)	0.05	0.14	tr
	50.8-52.0 m (166.6-170.5 ft.)	0.05	0.22	nil
	52.0-52.4 m (170.5-172.0 ft.)	0.05	0.14	tr
	52.4-52.7 m (172.0-173.0 ft.)	0.04	0.13	tr
	54.1-54.7 m (177.5-179.5 ft.)	0.03	0.13	tr

CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation. Graphite intersected in hole E-14 suggests a biogenic component to the sequence. The schistose character of sulphide host rocks suggests structural modification.

REFERENCES

A.F. 90643, 91487, 92654; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Schledewitz, D.C.P.

1993a: Geology of the Webb Lake-Fay Lake area (NTS 63K/14NE and 63K/15NW); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1993, pp. 29-32.

1993b: Webb Lake-Fay Lake (east half); Manitoba Energy and Mines, Minerals Division, Preliminary Map 1993-K4 (NTS 63K/15NW), 1:20 000.

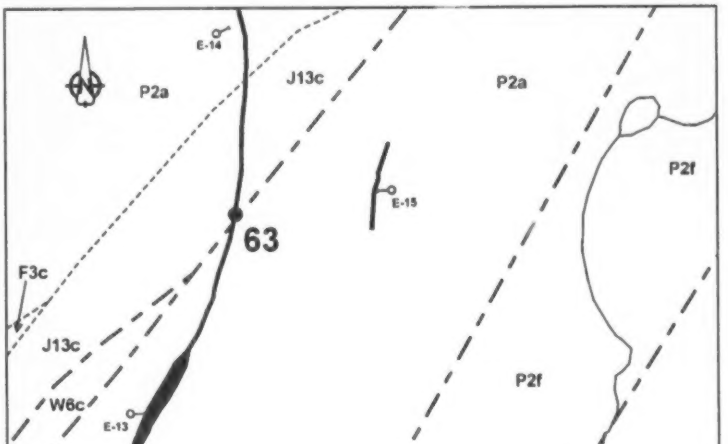

E-14
P2a
J13c
P2a
P2f
E-15
63
F3c
J13c
W6c
E-13
P2f
P10b
P2a
P2f
"Saxton"
("Hasset")
Lake
P10b
0 50 100 200
metres
63K/15-63-1
PALEOPROTEROZOIC
W6c Mafic phyllonite +/- carbonate, cataclasite
P10b Quartz porphyry, feldspar porphyry, quartz-feldspar porphyry dyke complex
P2a Gabbro, diorite
P2f Diabase, diabase dyke complex
J13c Rhyolite, dacite; quartz porphyry, feldspar porphyry, quartz feldspar porphyry
F3c Long Bay ocean-island basalt conglomerate, sandstone
Geological contact (approximate)- NATMAP Shield Margin Project Working Group, 1998
Fault or shear zone margin (approximate)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 91487, 92654)
Drillhole (A.F. 92654)
63● Mineral occurrence location

Figure 63-1: Geological setting of occurrence 62.

LOCATION: 64

NAME: mineralization intersected by diamond drilling
UTM: 382580E, 6087215N
AREA: west of Sexton (Hasset) Lake (unofficial names) south of Muhekun Lake, approximately 1.2 km W of west shoreline
ACCESS: via bush plane, then traverse
AIRPHOTO: MB90025-58

EXPLORATION SUMMARY

In 1971 Noranda Exploration Company, Ltd. performed HLEM (Ronka Mk. III) surveys in the area. Some of the conductive responses were subsequently drilled by Manitoba Mineral Resources, Ltd. (A.F. 90643, 92654).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 64-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). Schledewitz (1993a, b) indicates that the area is underlain by quartz-phyric rhyodacite and hornblende-plagioclase-phyricvolcaniclastic rocks with abundant hornblende-plagioclase and plagioclase-phyric intermediate dykes and sills (unit J13c), and basaltic conglomerate and sandstone (unit F3c). Mafic phyllonite±carbonate (unit W6c) occurs to the SE, and gabbro and diorite (unit P2a) occur to the NW.

The lithologic description for hole E-12 indicates that the sequence that hosts the occurrence consists of interlayered volcaniclastic ("tuffaceous") and rhyolitic to "andesitic" mafic volcanic rocks (A.F. 90643, 92654). Fine-grained amphibolites of unknown affinity are also present. Schistose intervals are common and suggest that the sequence has undergone significant deformation.

MINERALIZATION

A poorly mineralized (no percentages given) schistose interval was intersected between 40.0-54.3 m (130.9-178.2 ft.) (A.F. 90643, 92654). The sulphides are dominated by pyrite with lesser pyrrhotite. Minor chalcopyrite was also noted. Minor graphite is also present in the mineralized intervals.

GEOCHEMICAL DATA

The following assays were obtained from mineralized intervals sampled in drill hole E-12 (A.F. 90643, 92654):

Interval	%Cu	%Zn	Au
40.1-40.8 m (131.5-133.7 ft.)	0.05	0.30	tr
41.7-42.3 m (136.9-138.7 ft.)	0.06	0.29	tr
45.3-46.7 m (148.5-153.3 ft.)	0.02	0.27	tr
47.0-48.6 m (154.2-159.3 ft.)	0.04	0.12	tr
50.0-50.7 m (164.1-166.2 ft.)	0.06	0.05	tr
51.8-53.3 m (169.8-175.0 ft.)	0.03	0.02	tr
53.9-54.3 m (177.0-178.2 ft.)	0.03	o.05	tr
99.6-100.0 m (326.8-328.2 ft.)	0.03	0.07	tr
100.2-100.6 m (328.6-330.0 ft.)	0.05	0.09	tr

CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation. The presence of graphite suggests a biogenic component to the sequence. Schistose character of sulphide host rocks suggests structural modification.

REFERENCES

A.F. 90643, 91487, 92654; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Schledewitz, D.C.P.

1993a: Geology of the Webb Lake-Fay Lake area (NTS 63K/14NE and 63K/15NW); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1993, pp. 29-32.

1993b: Webb Lake-Fay Lake (east half); Manitoba Energy and Mines, Minerals Division, Preliminary Map 1993-K4 (NTS 63K/15NW), 1:20 000.

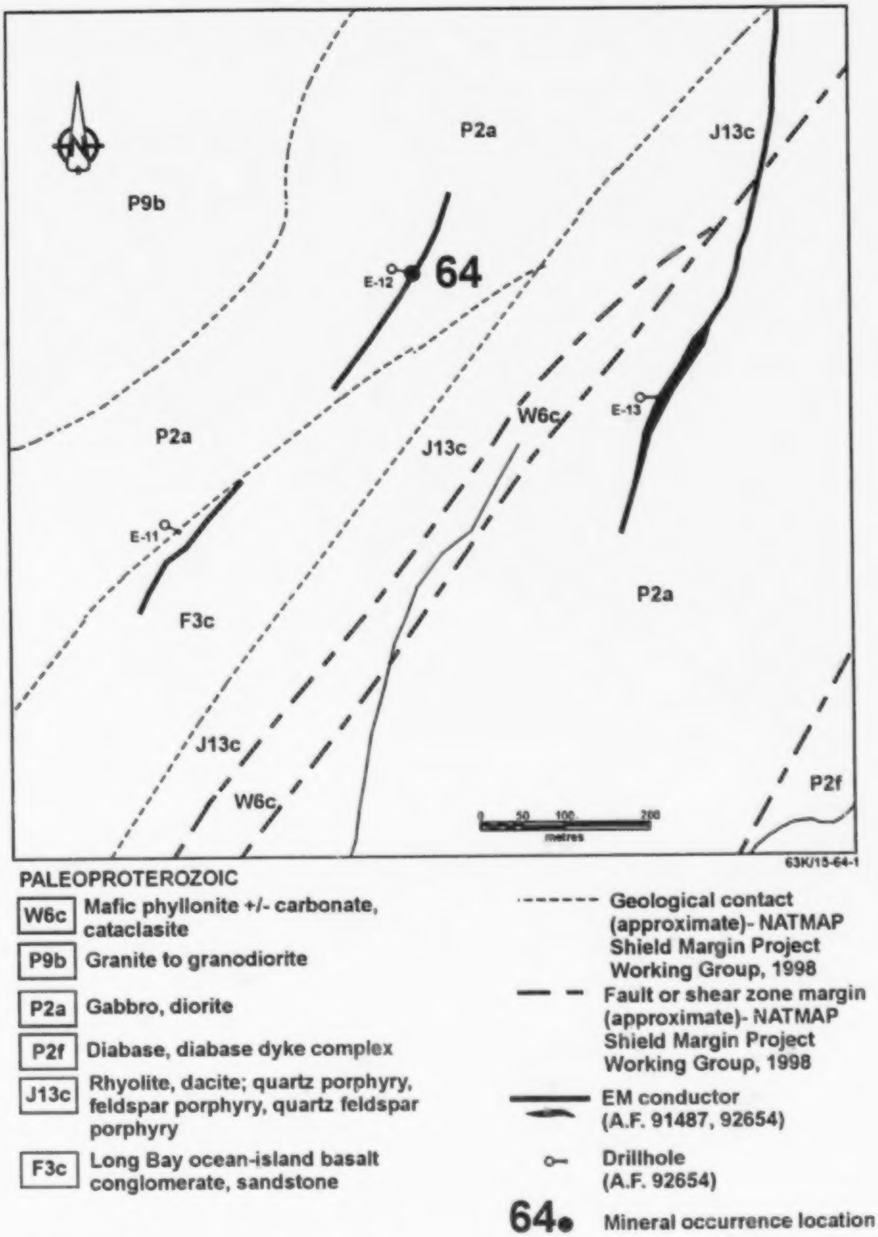

P2a
J13c
P9b
E-12
64
P2a
W6c
E-13
J13c
E-11
P2a
F3c
J13c
W6c
P2f
0 50 100 200
metres
63K/15-64-1
PALEOPROTEROZOIC
W6c Mafic phyllonite +/- carbonate, cataclasite
P9b Granite to granodiorite
P2a Gabbro, diorite
P2f Diabase, diabase dyke complex
J13c Rhyolite, dacite; quartz porphyry, feldspar porphyry, quartz feldspar porphyry
F3c Long Bay ocean-island basalt conglomerate, sandstone
Geological contact (approximate)- NATMAP Shield Margin Project Working Group, 1998
Fault or shear zone margin (approximate)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 91487, 92654)
Drillhole (A.F. 92654)
64 Mineral occurrence location

Figure 64-1: Geological setting of occurrence 64.

LOCATION: 65

NAME: mineralization intersected by diamond drilling
UTM: 382350E, 6086875N
AREA: west of south end of Sexton (Hasset) Lake (unofficial names) south of Muhekun Lake, approximately 1.2 km W of west shoreline
ACCESS: via bush plane, then traverse
AIRPHOTO: MB90025-58

EXPLORATION SUMMARY

In 1971 Noranda Exploration Company, Ltd. performed HLEM (Ronka Mk. III) surveys in the area. Some of the conductive responses were subsequently drilled by Manitoba Mineral Resources, Ltd. (A.F. 90643, 92654).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 65-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). Schledewitz (1993a, b) indicated the area is underlain by quartz-phyric rhyodacite and hornblende-plagioclase-phyric volcaniclastic rocks with abundant hornblende-plagioclase and plagioclase-phyric intermediate dykes and sills (unit J13c), and basaltic conglomerate and siltstone (unit F3c). Mafic phyllonite±carbonate (unit W6c) occurs to the SE, and gabbro and diorite (unit P2a) occur to the NW.

The lithologic description for hole E-11 indicates the sequence that hosts the mineralization is dominated by "tuff" with rhyolitic and mafic volcanic intervals (A.F. 90643, 92654). The description is not clear enough to ascertain if these are actually volcaniclastic rocks or banded schists. Schistose intervals are common suggesting the sequence has undergone significant deformation.

MINERALIZATION

One main mineralized interval was intersected in hole E-11 from 71.7-101.9 m (235.1-334.2 ft.) (A.F. 90643, 92654). It contains low, but unspecified quantities of sulphides, dominated by pyrite with lesser pyrrhotite and rare chalcopyrite. Graphite is present in one thin sulphide-rich interval above the main mineralized zone.

GEOCHEMICAL DATA

The following assays were obtained from mineralized intervals sampled in drill hole E-11 (A.F. 90643, 92654) (see table below).

Interval	%Cu	%Zn	Au
27.8-29.5 m (91.2-96.9 ft.)	0.05	tr	0.34 g Au/t (0.01 oz. Au/ton)
72.5-73.2 m (238.0-240.0 ft.)	0.06	tr	0.68 g Au/t (0.02 oz. Au/ton)
73.4-74.0 m (240.8-242.7 ft.)	0.04	tr	1.37 g Au/t (0.04 oz. Au/ton)
84.3-85.2 m (276.7-279.5 ft.)	0.02	0.06	tr
86.1-87.0 m (282.6-285.3 ft.)	0.07	0.02	tr
88.6-89.5 m (290.7-293.7 ft.)	0.11	tr	tr
92.1-92.5 m (302.3-303.5 ft.)	0.06	0.06	tr
94.5-94.9 m (309.9-311.3 ft.)	0.10	0.15	tr
97.9-98.6 m (321.2-323.4 ft.)	0.27	0.21	tr
98.8-100.5 m (324.1-329.8 ft.)	0.01	0.27	tr

CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation. The presence of graphite suggests a biogenic component to the sequence.

REFERENCES

A.F. 90643, 91487, 92654; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Schledewitz, D.C.P.

1993a: Geology of the Webb Lake-Fay Lake area (NTS 63K/14NE and 63K/15NW); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1993, pp. 29-32.

1993b: Webb Lake-Fay Lake (east half); Manitoba Energy and Mines, Minerals Division, Preliminary Map 1993-K4 (NTS 63K/15NW), 1:20 000.

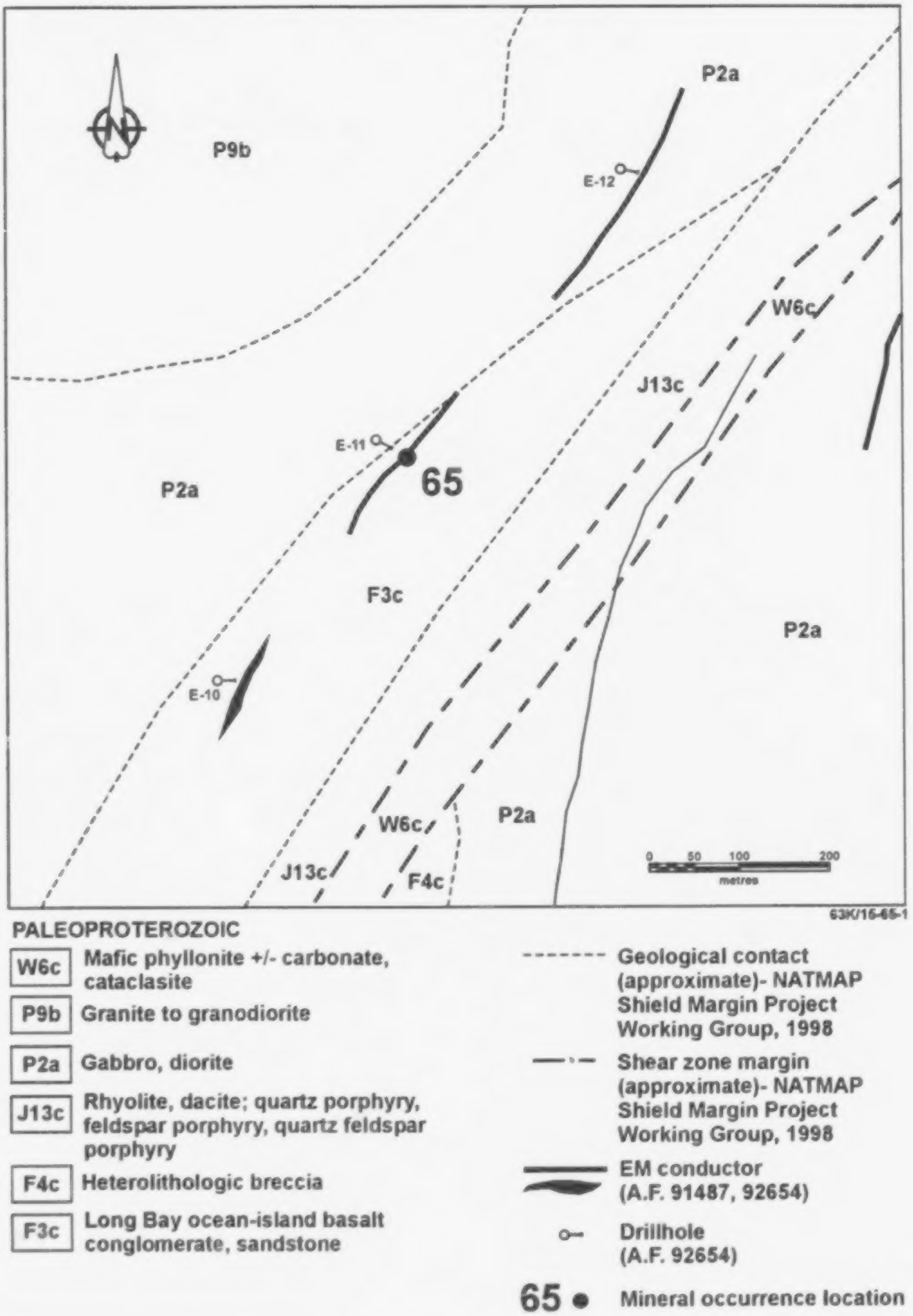

P2a
P9b
E-12
W6c
J13c
E-11
65
P2a
F3c
P2a
E-10
W6c
P2a
J13c
F4c
0 50 100 200
metres
63K/16-65-1
PALEOPROTEROZOIC
W6c Mafic phyllonite +/- carbonate, cataclasite
P9b Granite to granodiorite
P2a Gabbro, diorite
J13c Rhyolite, dacite; quartz porphyry, feldspar porphyry, quartz feldspar porphyry
F4c Heterolithologic breccia
F3c Long Bay ocean-island basalt conglomerate, sandstone
Geological contact (approximate)- NATMAP Shield Margin Project Working Group, 1998
Shear zone margin (approximate)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 91487, 92654)
Drillhole (A.F. 92654)
65 Mineral occurrence location

Figure 65-1: Geological setting of occurrence 65.

LOCATION: 66

NAME: mineralization intersected by diamond drilling
UTM: 382130E, 6086610N
AREA: approximately 2.2 km NNE of Moen Bay, Elbow Lake
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage, then traverse
AIRPHOTO: MB90025-58

EXPLORATION SUMMARY

In 1971 Noranda Exploration Company, Ltd. performed HLEM (Ronka Mk. III) surveys in the area. Some of the conductive responses were subsequently drilled by Manitoba Mineral Resources, Ltd. (A.F. 90643, 92654).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 66-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). Schledewitz (1993a, b) indicates that the area is underlain by quartz-phyric rhyodacite and hornblende-plagioclase-phyric volcaniclastic rocks with abundant hornblende-plagioclase and plagioclase-phyric intermediate dykes and sills (unit J13c). Basaltic conglomerate and sandstone (unit F3c) occurs west of the occurrence, and mafic phyllonite±carbonate (unit W6c) occurs to the east.

Hole E-10 intersected a sequence of interlayered rhyolites, hornblende bearing tuffs, "andesites" and feldspar porphyries (A.F. 90643, 92654). Much of the sequence is described as being sheared, but it is unclear if the tuffaceous intervals are actually volcaniclastic rocks or banded schists derived from mafic metavolcanic lithologies.

MINERALIZATION

Hole E-10 intersected a "tuffaceous" interval from (145.7-171.2 ft.) containing "slight" to "well mineralized" intervals with pyrite and lesser pyrrhotite (A.F. 90643, 92654). Several thin sulphide-bearing zones were also intersected higher and lower in the hole. Graphite is a rare constituent of these intervals.

GEOCHEMICAL DATA

The following assays were obtained from mineralized intervals sampled in drill hole E-10 (A.F. 90643, 92654) (see table below).

Interval	%Cu	%Zn	Au
41.1-41.8 m (135.0-137.1 ft.)	0.07	tr	tr
47.7-49.2 m (156.6-161.4 ft.)	0.05	0.24	tr
49.4-51.1 m (162.0-167.5 ft.)	0.10	0.10	tr
51.8-52.2 m (170.0-171.2 ft.)	0.07	0.15	tr
57.6-58.8 m (189.1-192.8 ft.)	0.09	0.02	tr
63.3-63.5 m (207.7-208.4 ft.)	0.02	0.04	nil
89.9-90.9 m (295.0-298.2 ft.)	0.06	0.30	nil

CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation. The presence of graphite suggests a biogenic component to the sequence.

REFERENCES

A.F. 90643, 91487, 92654; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Schledewitz, D.C.P.

1993a: Geology of the Webb Lake-Fay Lake area (NTS 63K/14NE and 63K/15NW); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1993, pp. 29-32.

1993b: Webb Lake-Fay Lake (east half); Manitoba Energy and Mines, Minerals Division, Preliminary Map 1993-K4 (NTS 63K/15NW), 1:20 000.

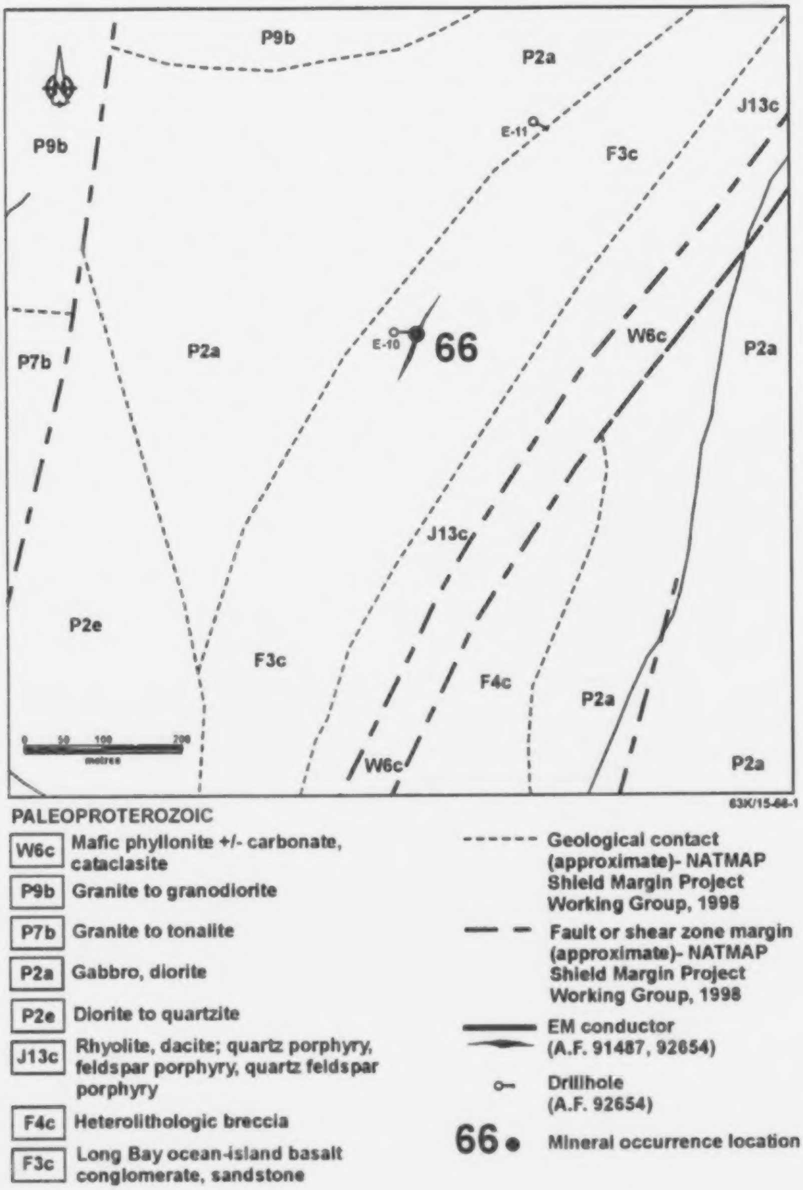

P9b
P2a
J13c
E-11
F3c
P9b
P7b
P2a
E-10
66
W6c
P2a
J13c
P2e
F3c
F4c
P2a
W6c
P2a
0 50 100 200
metres
63K/15-66-1
PALEOPROTEROZOIC
W6c Mafic phyllonite +/- carbonate, cataclasite
P9b Granite to granodiorite
P7b Granite to tonalite
P2a Gabbro, diorite
P2e Diorite to quartzite
J13c Rhyolite, dacite; quartz porphyry, feldspar porphyry, quartz feldspar porphyry
F4c Heterolithologic breccia
F3c Long Bay ocean-island basalt conglomerate, sandstone
Geological contact (approximate)- NATMAP Shield Margin Project Working Group, 1998
Fault or shear zone margin (approximate)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 91487, 92654)
Drillhole (A.F. 92654)
66 ● Mineral occurrence location

Figure 66-1: Geological setting of occurrence 66.

LOCATION: 67

NAME: mineralization intersected by diamond drilling
UTM: 379440E, 6086175N
AREA: approximately 600 m E of north end of Tee Lake
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage, then traverse
AIRPHOTO: MB90025-113

EXPLORATION SUMMARY

In 1957 Prospectors Airways Company Ltd. drilled a hole at the occurrence (A.F. 90504). The occurrence area was prospected in 1982 for Cangold Joint Venture (A.F. 92593).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 67-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by massive aphyric and quartz-phyric massive flows (unit J4a) that are part of the Tee Lake rhyolite. Medium- to coarse-grained, equigranular gabbro to melagabbro (unit P2a) occurs to the west, and a mafic to felsic dyke complex (unit J13d) occurs to the NE.

The litholog for hole K-9 describes a sequence consisting of massive "andesite" from 3.0-69.2 m (10-227 ft.), and "sedimentary (metamorphosed) rock" with a "rhyolitic" texture from 69.2-85.3 m (227-280 ft.) (A.F. 90504). It appears this hole intersected a basaltic flow and a rhyolitic unit. The contact between the two units is graphitic.

MINERALIZATION

Minor disseminated sulphide mineralization occurs from 69.2-80.8 m (227-265 ft.), with the highest quantity occurring from 69.2-73.5 m (227-241 ft.) within "sedimentary (metamorphosed) rock", possibly rhyolite (A.F. 90504). Some intervals are described as containing "massive pyrrhotite", but a percentage sulphide content is given for only one section (5% pyrite and pyrrhotite). Pyrrhotite appears to be the dominant sulphide with lesser pyrite and trace chalcopyrite.

GEOCHEMICAL DATA

The following assays were obtained from mineralized intervals sampled in drill hole K-9 (A.F. 90504):

Interval	%Cu	%Zn	%Ni
69.5-70.6 m (228.0-231.5 ft.)	0.15	tr	0.03
70.6-71.6 m (231.5-235.5 ft.)	0.15	0.10	0.09
73.0-73.5 m (239.5-241.0 ft.)	0.15	0.10	0.06

CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation. Pyrrhotite and pyrite are disseminated through the mineralized interval.

REFERENCES

A.F. 90504, 91487, 92593, 92654; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

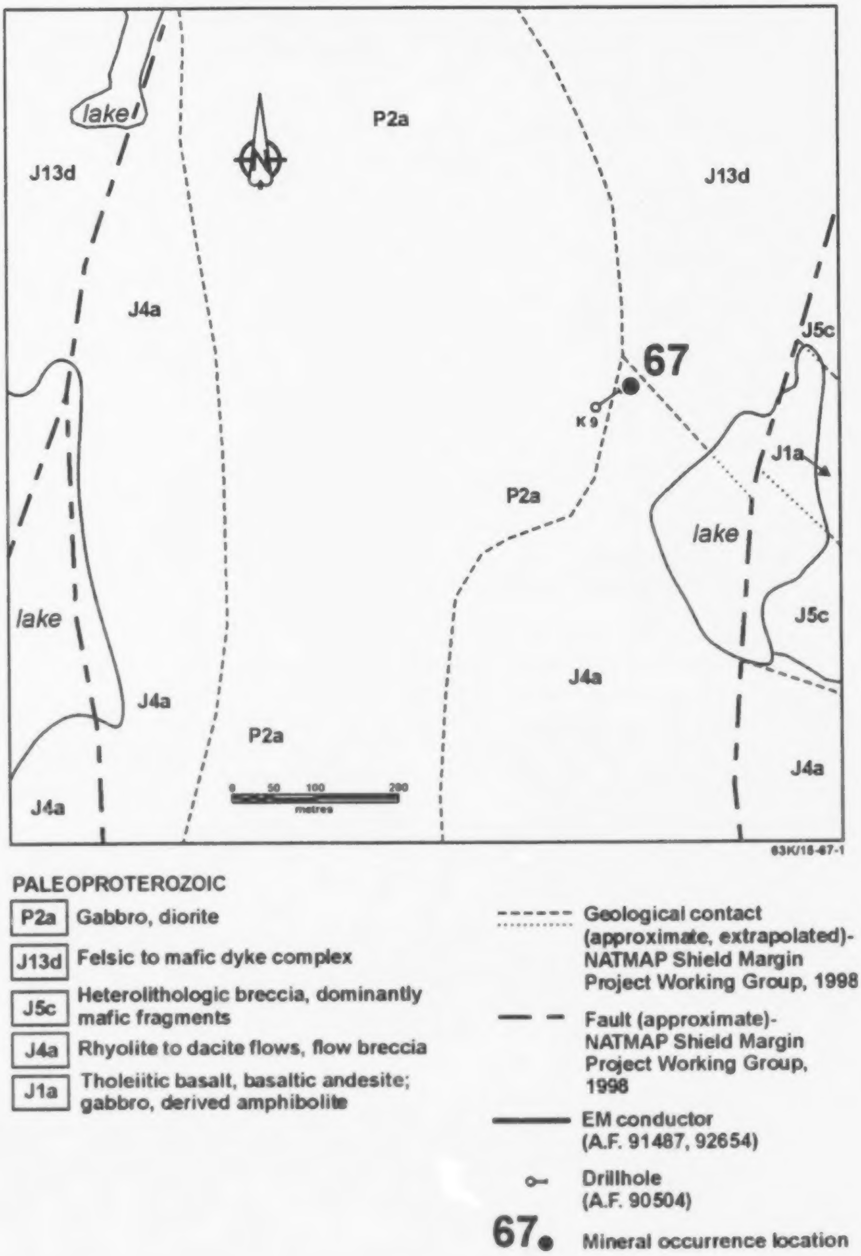

lake
P2a
J13d
J13d
J4a
J5c
67
K 9
J1a
P2a
lake
lake
J5c
J4a
J4a
P2a
J4a
J4a
0 50 100 200
metres
63K/16-67-1
PALEOPROTEROZOIC
P2a Gabbro, diorite
J13d Felsic to mafic dyke complex
J5c Heterolithologic breccia, dominantly mafic fragments
J4a Rhyolite to dacite flows, flow breccia
J1a Tholeiitic basalt, basaltic andesite; gabbro, derived amphibolite
Geological contact (approximate, extrapolated)- NATMAP Shield Margin Project Working Group, 1998
Fault (approximate)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 91487, 92654)
Drillhole (A.F. 90504)
67 Mineral occurrence location

Figure 67-1: Geological setting of occurrence 67.

LOCATION: 68

NAME: mineralization intersected by diamond drilling
UTM: 380060E, 6086105N
AREA: approximately 1.2 km E of north end of Tee Lake
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage, then traverse
AIRPHOTO: MB90025-114

EXPLORATION SUMMARY

In 1971 Noranda Exploration Company, Ltd. performed HLEM (Ronka Mk. III) surveys in the area. Some of the conductive responses were subsequently drilled by Manitoba Mineral Resources, Ltd. (A.F. 90643, 92654).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 68-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by basalt (unit J1a). Heterolithologic breccia dominated by mafic fragments (unit J5c) occurs to the west, and buff, foliated, medium-grained, equigranular granodiorite (unit P7b) occurs to the NE.

The litholog for hole E-18 confirms that the occurrence is located within a mafic tectonite. The sequence is dominated by foliated "andesite" and amphibole schist with minor rhyolitic intervals (A.F. 90643, 92654). The lithologic description for hole E-19 describes a foliated "tuff" sequence, but no details are provided for individual units.

MINERALIZATION

Sulphide units containing up to 90% pyrite were intersected in both holes (A.F. 90643, 92654). They are closely associated with a rhyolitic unit that appears lower in the hole immediately below the sulphides.

GEOCHEMICAL DATA

The following assays were obtained from mineralized intervals sampled in drill hole E-18 (A.F. 90643, 92654) (see table below).

Interval	%Cu	%Zn	Au
34.7-36.4 m (113.8-119.4 ft.)	0.02	0.19	0.34 g Au/t (0.01 oz. Au/ton)
37.2-38.6 m (121.9-126.8 ft.)	0.02	0.30	tr
38.6-39.8 m (126.8-130.5 ft.)	0.07	0.13	tr
39.8-40.1 m (130.5-131.6 ft.)	0.05	tr	tr

CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation. The occurrence is situated within a strongly deformed zone so original rock types cannot be identified with certainty.

REFERENCES

A.F. 90643, 92654; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

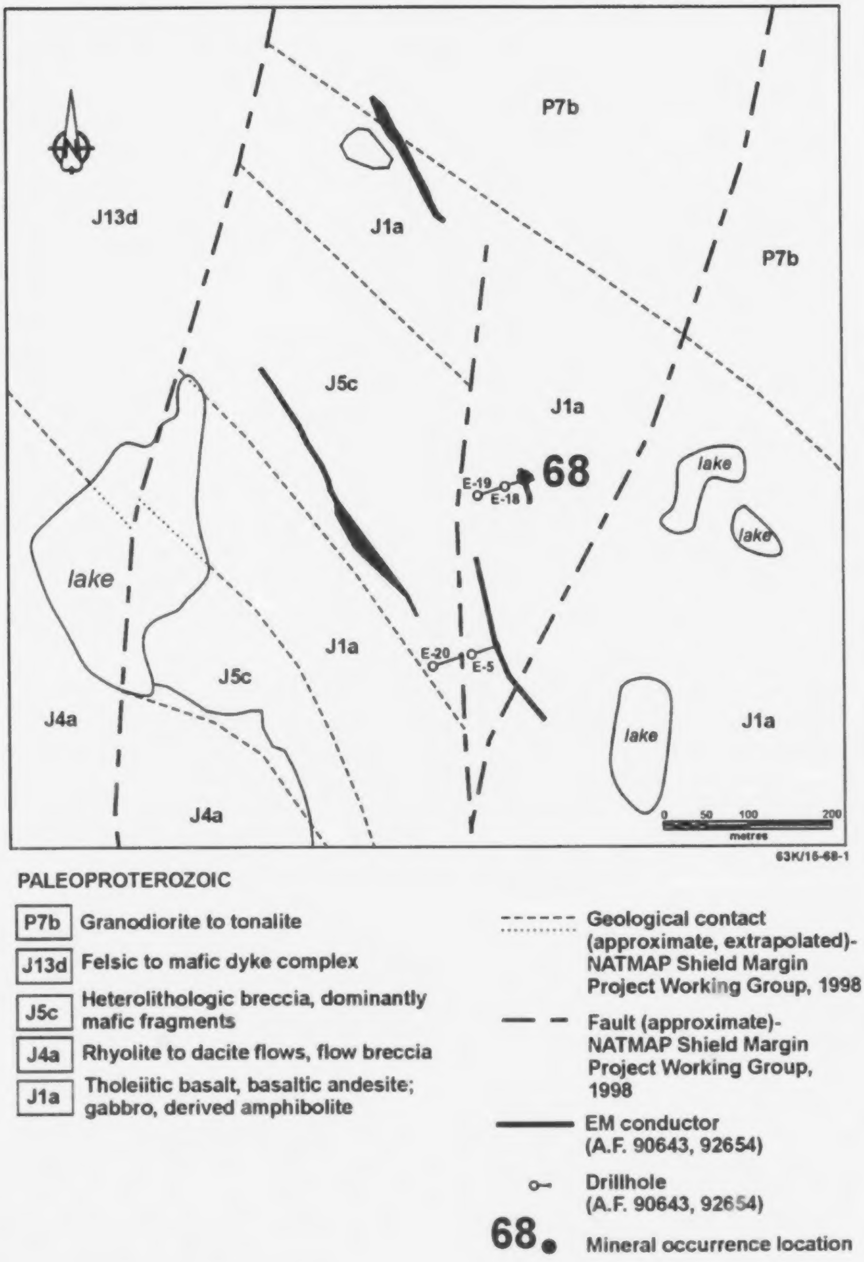

N
J13d
J1a
P7b
P7b
J5c
J1a
68
E-19
E-18
lake
lake
lake
lake
J1a
E-20
E-5
J5c
J4a
J4a
J1a
0 50 100 200
metres
63K/16-68-1
PALEOPROTEROZOIC
P7b Granodiorite to tonalite
J13d Felsic to mafic dyke complex
J5c Heterolithologic breccia, dominantly mafic fragments
J4a Rhyolite to dacite flows, flow breccia
J1a Tholeiitic basalt, basaltic andesite; gabbro, derived amphibolite
Geological contact (approximate, extrapolated)- NATMAP Shield Margin Project Working Group, 1998
Fault (approximate)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 90643, 92654)
Drillhole (A.F. 90643, 92654)
68 Mineral occurrence location

Figure 68-1: Geological setting of occurrence 68.

LOCATION: 69

NAME: mineralization intersected by diamond drilling
UTM: 380030E, 6085895N
AREA: approximately 1.2 km E of north end of Tee Lake
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage, then traverse
AIRPHOTO: MB90025-114

EXPLORATION SUMMARY

In 1971 Noranda Exploration Company, Ltd. performed HLEM (Ronka Mk. III) surveys in the area. Some of the conductive responses were subsequently drilled by Manitoba Mineral Resources, Ltd. (A.F. 90643, 92654).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 69-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by basalt (unit J1a). Massive aphyric and quartz-phyric rhyolite flows that (unit J4a) occur to the SW. Buff, foliated, medium-grained, equigranular granodiorite (unit P7b) occurs to the NE.

The litholog for hole E-5 indicates the sequence at the occurrence consists of amphibole-phyric basalt ("andesite") with altered rhyolitic intervals (A.F. 90643, 92654). Some schistose intervals are present. Much of the sequence is described as being altered with irregular quartz and carbonate veins and chloritic areas.

The sequence drilled by hole E-20 is described as a series of rhyolite tuffs with lesser andesite, andesite tuffs and diorite (A.F. 90643, 92654). This description suggests the sequence has been highly tectonized and the layered character of the rocks is a result of shear within this assemblage.

MINERALIZATION

Sulphide-rich intervals containing up to 65% combined pyrite and pyrrhotite occur in two intervals in hole E-5, from 34.4-47.4 m (113.0-155.6 ft.) and 59.3-68.5 m (194.5-224.8 ft.) (A.F. 90643, 92654). Minor chalcopyrite was also noted. Two mineralized intervals, containing up to 85% sulphides (pyrite and pyrrhotite), were alsointersected in hole E-20, from 73.2-82.3 m (240.0-270.0 ft.) and 105.2-105.6 m (345.0-346.5 ft.).

GEOCHEMICAL DATA

The following assays were obtained from mineralized intervals sampled in drill holes E-15 and E-20 (A.F. 90643) (see table below).

	Interval	%Cu	%Zn	Au	
Drill Hole E-5	34.4-35.0 m (113.0-114.9 ft.)	0.04	0.07	nil	
	35.3-37.0 m (115.7-121.3 ft.)	0.05	0.08	tr	
	37.0-38.5 m (121.3-126.3 ft.)	0.05	0.11	tr	
	39.1-40.0 m (128.2-131.3 ft.)	0.08	0.11	nil	
	40.3-42.1 m (132.3-138.2 ft.)	0.03	0.11	tr	
	44.0-44.7 m (144.2-146.6 ft.)	0.03	0.19	tr	
	56.0-56.7 m (183.6-186.1 ft.)	tr	tr	tr	
	57.3-59.3 m (188.1-194.5 ft.)	0.07	0.03	nil	
	59.3-61.6 m (194.5-202.1 ft.)	0.02	0.07	tr	
	61.8-63.6 m (202.7-208.7 ft.)	tr	0.15	tr	
	63.6-65.5 m (208.7-214.8 ft.)	0.04	0.14	nil	
	65.5-66.3 m (214.8-217.5 ft.)	0.09	0.13	nil	
	66.7-68.2 m (218.7-223.7 ft.)	0.16	0.11	tr	0.04% Ni
Drill Hole E-20	74.4-75.9 m (244.0-249.0 ft.)	0.03	0.12	tr	
	78.6-79.2 m (258.0-260.0 ft.)	0.03	0.13	tr	
	79.6-81.4 m (261.0-267.0 ft.)	0.04	0.12	tr	
	105.2-105.6 m (345.0-346.5 ft.)	0.06	0.05	tr	

CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation. The occurrence is situated within a deformed zone so original rock types cannot be identified with certainty.

REFERENCES

A.F. 90643, 92654; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

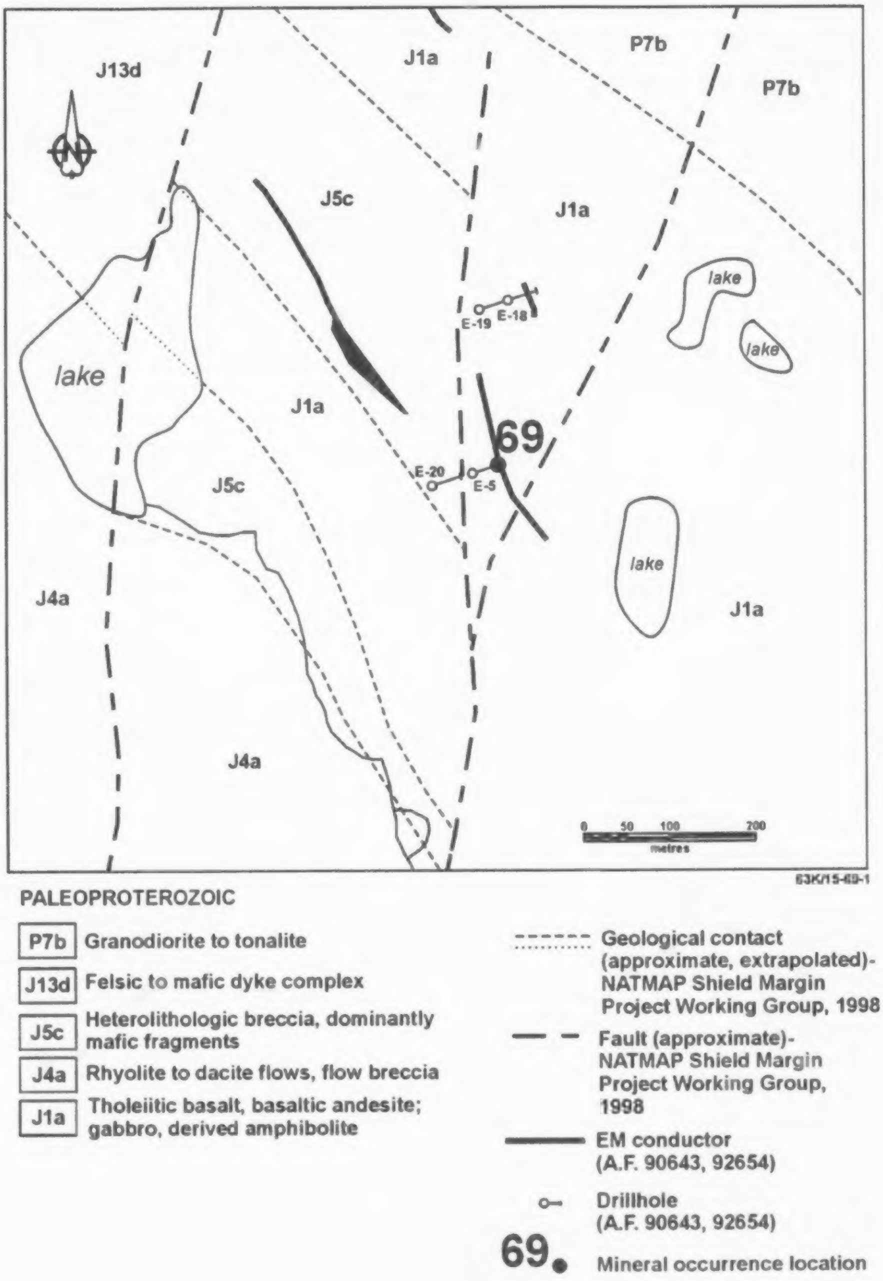

J13d
J1a
P7b
P7b
J5c
J1a
lake
E-19
E-18
lake
lake
J1a
69
E-20
E-5
J5c
lake
J4a
J1a
J4a
0 50 100 200
metres
63K/15-69-1
PALEOPROTEROZOIC
P7b Granodiorite to tonalite
J13d Felsic to mafic dyke complex
J5c Heterolithologic breccia, dominantly mafic fragments
J4a Rhyolite to dacite flows, flow breccia
J1a Tholeiitic basalt, basaltic andesite; gabbro, derived amphibolite
Geological contact (approximate, extrapolated)- NATMAP Shield Margin Project Working Group, 1998
Fault (approximate)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 90643, 92654)
Drillhole (A.F. 90643, 92654)
69 Mineral occurrence location

Figure 69-1: Geological setting of occurrence 69.

LOCATION: 70

NAME: mineralization intersected by diamond drilling and exposed in trenches
UTM: 380255E, 6085595N
AREA: approximately 1.7 km east of Tee Lake
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage, then traverse
AIRPHOTO: MB90025-114

EXPLORATION SUMMARY

In 1948 the Consolidated Mining and Smelting Company of Canada, Ltd. drilled five holes at the occurrence (A.F. 90518). This project appears to have been a follow-up to some encouraging gold assays obtained from several trenches at the occurrence.

The trenches were not found during the field examination of occurrences in the area.

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 70-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by basalt (unit F1a) and derived mafic tectonite. Massive aphyric and quartz-phyric rhyolite flows (unit J4a), that are part of the Tee Lake rhyolite, occur to the west, and buff, foliated, medium-grained, equigranular granodiorite (unit P7b) occurs to the NE.

The trench and drill hole locations are shown in Fig. 70-2. The lithologs for the drill holes do not provide much detail in describing the units that underlie the occurrence, but indicate the sequence is dominated by foliated "greenstone" (basalt) (A.F. 90518).

MINERALIZATION

Quartz-carbonate stringers, veinlets, and uncommon veins of milky quartz, some carrying small quantities of pyrite and chalcopyrite, are widely distributed throughout the drill core obtained from this occurrence (A.F. 90518). The vein system exposed in the trenches at surface is discontinuous and appears to have been disrupted by continued deformation within the tectonite.

GEOCHEMICAL DATA

No assays have been reported for samples obtained from the drill core. Samples from the trenches returned the following values (A.F. 90518):

Trench 4	14.73 g Au/t (0.43 oz. Au/ton), 1.0% Cu across 0.6 m (2.0 ft.)
Trench 9	6.16 g Au/t (0.18 oz. Au/ton) across 1.2 m (3.8 ft.)

CLASSIFICATION

Vein type deposit; single vein.

REFERENCES

A.F. 90518, 90643, 92654; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

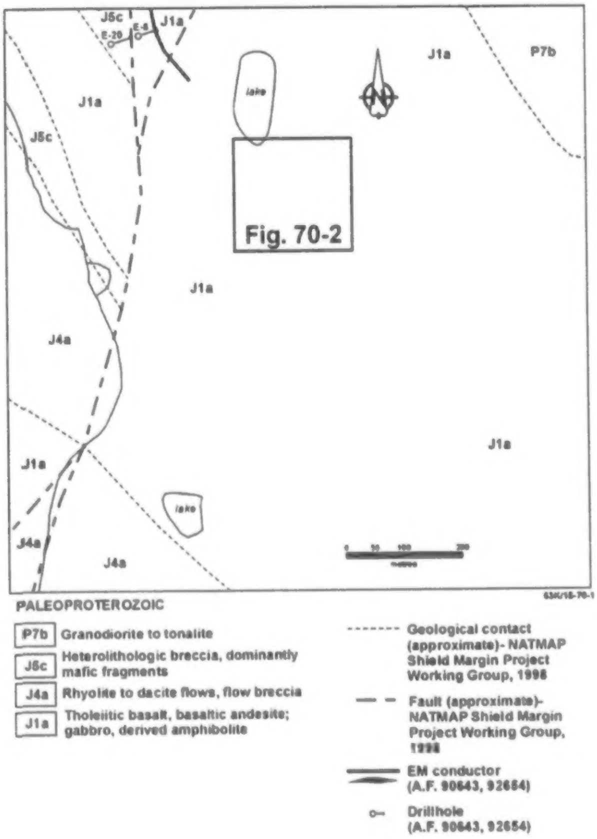

J5c
E-20
E-6
J1a
J1a
P7b
lake
N
J1a
J5c
Fig. 70-2
J1a
J4a
J1a
J1a
lake
J4a
J4a
0 50 100 200
metres
63K/16-70-1
PALEOPROTEROZOIC
P7b Granodiorite to tonalite
J5c Heterolithologic breccia, dominantly mafic fragments
J4a Rhyolite to dacite flows, flow breccia
J1a Tholeiitic basalt, basaltic andesite; gabbro, derived amphibolite
Geological contact (approximate)- NATMAP Shield Margin Project Working Group, 1998
Fault (approximate)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 90643, 92654)
Drillhole (A.F. 90643, 92654)

Figure 70-1: Geological setting of occurrence 70.

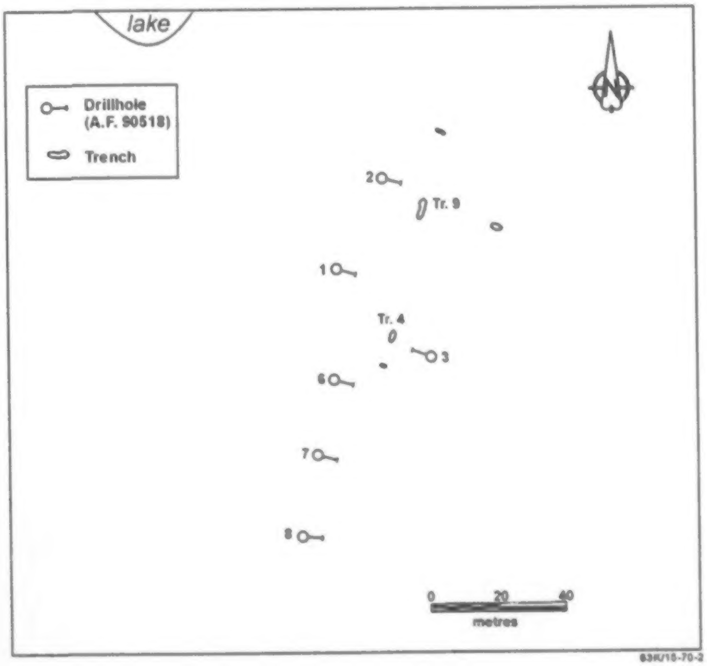

lake
N
Drillhole (A.F. 90518)
Trench
2
Tr. 9
1
Tr. 4
3
6
7
8
0 20 40
metres
63K/16-70-2

Figure 70-2: Approximate drillhole and trench locations at occurrence 70.

LOCATION: 71

NAME: mineralization intersected by diamond drilling
UTM: 381720E, 6085710N
AREA: approximately 1.2 km NNE of Moen Bay, Elbow Lake
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage, then traverse
AIRPHOTO: MB90025-57

EXPLORATION SUMMARY

In 1971 Noranda Exploration Company, Ltd. performed HLEM (Ronka Mk. III) surveys in the area. Some of the conductive responses were subsequently drilled by Manitoba Mineral Resources, Ltd. (A.F. 90643, 92654).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 71-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by metagreywacke and metasiltstone (unit F3c). Sparsely plagioclase megacrystic diabase (unit P2f), and intermediate lapilli tuff and crystal lapilli tuff (unit J6a) occur to the west. Schists (unit W6c) related to the Elbow Lake shear zone underlie the eastern part of the area (Galley *et al.*, 1987, 1989; Syme, 1990, 1991, 1992).

Hole E-6 intersected a sequence of mafic to felsic schists and "tuffs", with minor feldspar porphyry (A.F. 90643, 92654). The lithologic description indicates the assemblage has been extensively sheared, and the banded "tuffaceous" character of many of the units may be tectonic rather than depositional.

MINERALIZATION

Thin (generally <30 cm) sulphide-rich intervals occur between 26.4-59.7 m (86.5-195.8 ft.) in hole E-6 (A.F. 90643, 92654). These contain up to 40% pyrite. Pyrrhotite is present in subordinate quantities and chalcopyrite is widespread as a minor constituent. Graphite is also present in the sulphide-rich intervals.

GEOCHEMICAL DATA

The following assays were obtained from mineralized intervals sampled in drill hole E-6 (A.F. 90643, 92654):

Interval	%Cu	%Zn	%Ni	Au
56.4-56.8 m (185.2-186.5 ft.)	0.03	0.31	0.05	tr
59.4-59.7 m (194.9-195.8 ft.)	0.10	0.35	0.05	

CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation. Occurs within zone of strong deformation.

REFERENCES

A.F. 90643, 91487, 92654, 93052; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

Galley, A.G., Ames, D.E. and Franklin, J.M.

1987: Geological setting of gold mineralization in the Elbow Lake region, Manitoba; in Manitoba Energy and Mines, Minerals Division, Report of Field Activities, 1987, pp.175-177.

1989: Results of studies on the gold metallogeny of the Flin Flon belt; in Investigations by the Geological Survey of Canada in Manitoba and Saskatchewan during the 1984-1989 Mineral Development Agreements, Geological Survey of Canada, Open File 2133, pp.25-32.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Syme, E.C.

1990: Elbow Lake project (part of NTS 63K/15W); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1990, pp.49-57.

1991: Elbow Lake project - Part A: Supracrustal rocks and structural setting; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1991, pp.14-27.

1992: Elbow Lake Project - Part A: Supracrustal rocks; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1992, pp.32-46.

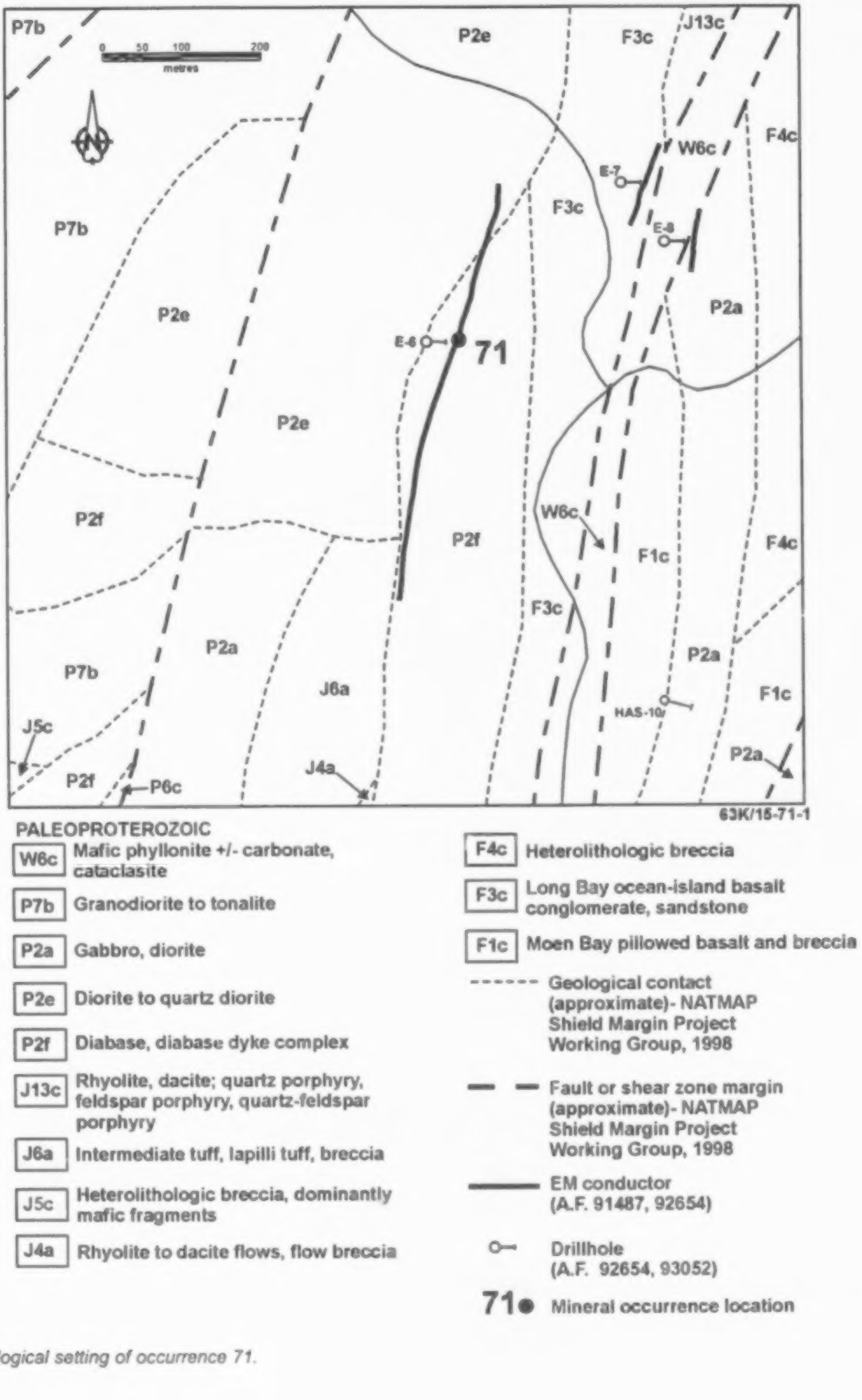

P7b
0 50 100 200
metres
N
P2e
F3c
J13c
W6c
F4c
E-7
E-8
P7b
F3c
P2e
P2a
E-6
71
P2e
W6c
P2f
P2f
F1c
F4c
F3c
P7b
P2a
J6a
P2a
F1c
HAS-10
J5c
P2a
P2f
P6c
J4a
63K/15-71-1
PALEOPROTEROZOIC
W6c Mafic phyllonite +/- carbonate, cataclasite
P7b Granodiorite to tonalite
P2a Gabbro, diorite
P2e Diorite to quartz diorite
P2f Diabase, diabase dyke complex
J13c Rhyolite, dacite; quartz porphyry, feldspar porphyry, quartz-feldspar porphyry
J6a Intermediate tuff, lapilli tuff, breccia
J5c Heterolithologic breccia, dominantly mafic fragments
J4a Rhyolite to dacite flows, flow breccia
F4c Heterolithologic breccia
F3c Long Bay ocean-island basalt conglomerate, sandstone
F1c Moen Bay pillowed basalt and breccia
Geological contact (approximate)- NATMAP Shield Margin Project Working Group, 1998
Fault or shear zone margin (approximate)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 91487, 92654)
Drillhole (A.F. 92654, 93052)
71 Mineral occurrence location

Figure 71-1: Geological setting of occurrence 71.

LOCATION: 72

NAME: mineralization intersected by diamond drilling
UTM: 377810E, 6076855N
AREA: under Elbow Lake, west of McDougalls Point
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage
AIRPHOTO: MB90025-136

EXPLORATION SUMMARY

In 1972-73 Manitoba Mineral Resources Ltd. performed an HLEM survey utilizing Geonics EM-17 and ABEM GUN equipment (A.F. 92149). Most of the conductors outlined by this survey were drill tested in 1974 (A.F. 92148, 92654).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 72-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by pillowed and massive aphyric flows of the McDougalls Point basalt (unit F1a). Fine- to medium-grained, equigranular diabase (unit F5a) is exposed in outcrops to the SW. Foliated, medium- to coarse-grained, equigranular to porphyritic hornblende-biotite granodiorite and quartz diorite (unit P7a) of the Big Rat Lake pluton occur to the west. The sequence is cut by several NNE-trending faults.

Hole E-55 intersected a sequence dominated by massive and foliated "andesite" with lesser massive rhyolite, graphitic schist, and brecciated intervals (A.F. 92654). The brecciated intervals may mark the location of one of the NNE-trending faults. Hole E-56 intersected massive and foliated "dacite", graphitic siltstone, quartzite with quartz pebbles, and well foliated rhyolitic "tuff" (A.F. 92654). The "tuffaceous" character of some intervals may be tectonic rather than a primary depositional characteristic.

MINERALIZATION

The following mineralization was intersected in holes E-55 and -56 (A.F. 92654) (see table below).

Hole No.	Interval	Mineralization
E-55	58.5-61.6 m (191.8-202.0 ft.)	10% pyrite as fine stringers in thin bands containing 30% graphite, within foliated, brecciated "andesite" with fine-grained, foliated felsic bands
	61.6-68.3 m (202.0-224.0 ft.)	10% pyrite as thin stringers in graphitic schist
	68.3-71.5 m (224.0-234.5 ft.)	20% pyrite as fine stringers in graphitic schist with rhyolitic fragments
E-56	31.0-33.8 m (101.7-111.0 ft.)	5-20% pyrite as thin stringers, in graphitic siltstone with quartzite Fragments
	33.8-34.4 m (111.0-113.0 ft.)	5% pyrite around quartzite pebbles
	35.1-38.7 m (115.0-127.0 ft.)	20% pyrite as thin stringers parallel to schistosity in graphitic siltstone
	71.0-72.2 m (233.0-237.0 ft.)	15% pyrite with graphite in massive and foliated "dacite"

GEOCHEMICAL DATA

No assays were reported in the assessment file for any of the mineralized intervals.

CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation.

REFERENCES

A.F. 91487, 92148, 92149 and 92654; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group
1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

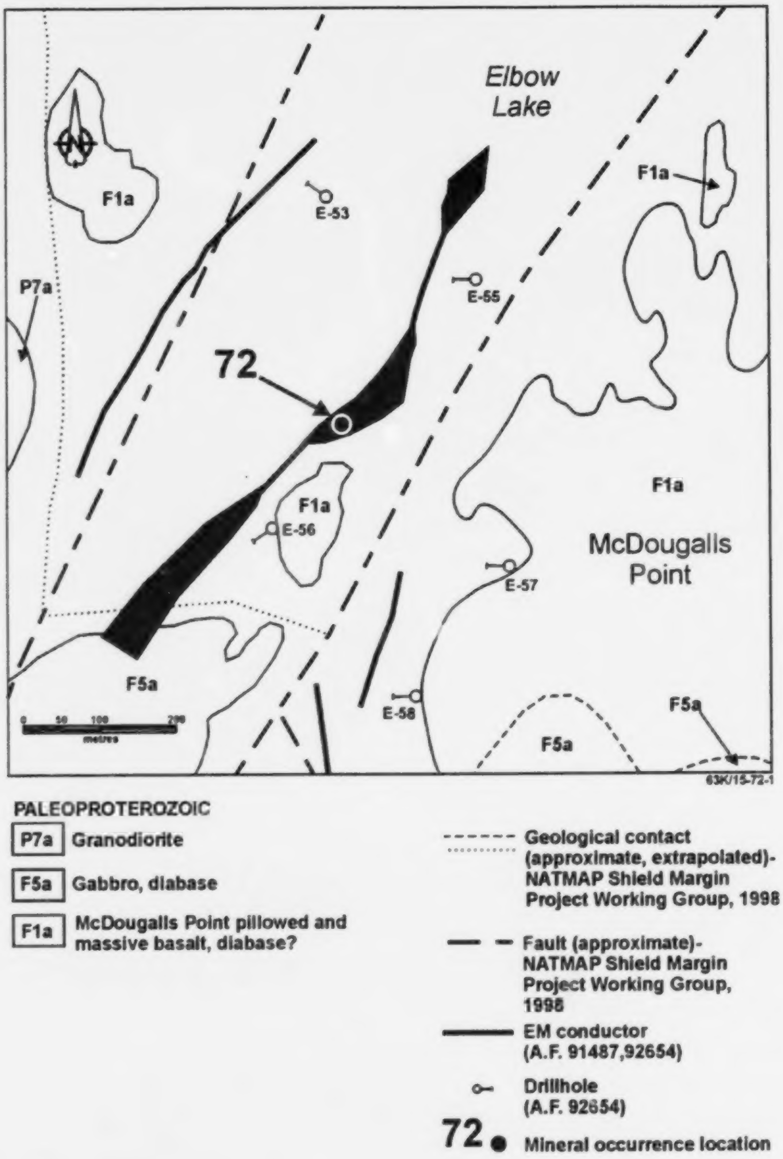

Elbow Lake
F1a
F1a
E-53
P7a
E-55
72
F1a
E-56
F1a
McDougalls Point
E-57
F5a
E-58
F5a
F5a
0 50 100 200
metres
63K/15-72-1
PALEOPROTEROZOIC
P7a Granodiorite
F5a Gabbro, diabase
F1a McDougalls Point pillowed and massive basalt, diabase?
Geological contact (approximate, extrapolated)-NATMAP Shield Margin Project Working Group, 1998
Fault (approximate)-NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 91487,92654)
Drillhole (A.F. 92654)
72 Mineral occurrence location

Figure 72-1: Geological setting of occurrence 72.

LOCATION: 73

NAME: mineralization intersected by diamond drilling
UTM: 381640E, 6084515N
AREA: approximately 200 m NE of Moen Bay, Elbow Lake
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage, then traverse
AIRPHOTO: MB90025-57

EXPLORATION SUMMARY

In 1956 Prospectors Airways Company Ltd. had VLEM (Crone) and ground magnetic surveys performed over the occurrence area (A.F. 90517). A drilling programme subsequently tested several of the conductive responses (A.F. 90516). In 1971 Noranda Exploration Company, Ltd. performed HLEM (Ronka Mk. III) surveys in the area. Some of the conductive responses were subsequently drilled by Manitoba Mineral Resources, Ltd. (A.F. 90643, 92654).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 73-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by mafic phyllonite (unit W6c), part of the Elbow Lake shear zone (Galley *et al.*, 1987, 1989; Syme, 1990, 1991, 1992), derived in this area from diabase and gabbro (unit P2f), and intruded by quartz-feldspar- and plagioclase-porphyry dykes. Diabase (unit P2f) occurs to the west of the occurrence.

The sequence intersected by the drill holes indicates that the rocks at the occurrence consist of "andesite", "quartz" and "hornblende diorite", and chloritic schist intervals (A.F. 90516).

MINERALIZATION

The character of the sulphides was not well described in the drill hole lithologic descriptions. A zone of pyrite and pyrrhotite with minor graphite containing "good to disseminated sulphides" occurs between 104.9 and 108.6 m (344.0-356.2 ft.) in hole #2 (A.F. 90516). Two intervals containing up to 50% sulphides occur in hole #3 from 99.0-110.2 m (324.8-361.5 ft.) and 114.8-122.5 m (376.7-402.0 ft.).

GEOCHEMICAL DATA

Mineralized intervals in holes #2 and #3 were sampled and assay results reported (A.F. 90516), but the location of the samples was not specified. All assays returned low metal values (Cu<0.19%, Zn<0.24%, Ni<0.07%, Au<0.52 g/t, and tr Ag).

CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation.

REFERENCES

A.F. 90516, 90517, 90643, 92654; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

Galley, A.G., Ames, D.E. and Franklin, J.M.

1987: Geological setting of gold mineralization in the Elbow Lake region, Manitoba; in Manitoba Energy and Mines, Minerals Division, Report of Field Activities, 1987, pp.175-177.

1989: Results of studies on the gold metallogeny of the Flin Flon belt; in Investigations by the Geological Survey of Canada in Manitoba and Saskatchewan during the 1984-1989 Mineral Development Agreements, Geological Survey of Canada, Open File 2133, pp.25-32.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Syme, E.C.

1990: Elbow Lake project (part of NTS 63K/15W); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1990, pp.49-57.

1991: Elbow Lake project - Part A: supracrustal rocks and structural setting; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1991, pp.14-27.

1992: Elbow Lake Project - Part A: Supracrustal rocks; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1992, pp.32-46.

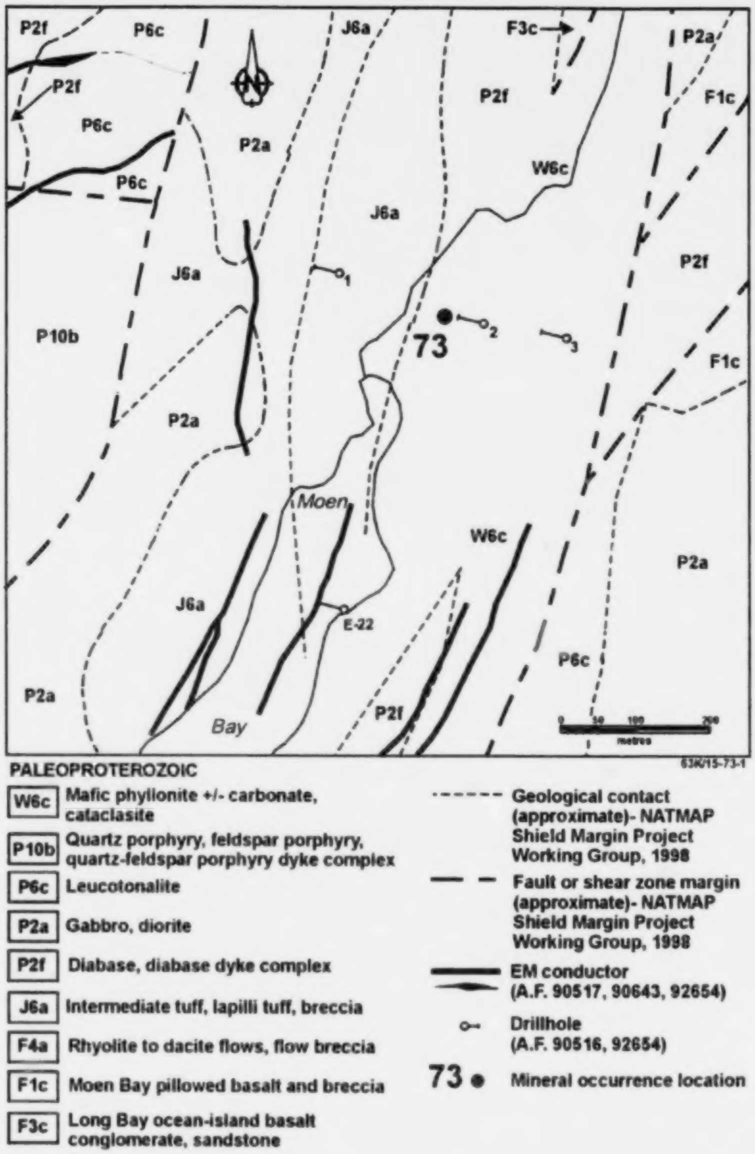

P2f
P6c
J6a
F3c
P2a
P2f
P6c
P2a
P2f
F1c
W6c
P6c
J6a
J6a
1
P2f
P10b
73
2
3
F1c
P2a
Moen
W6c
P2a
J6a
E-22
P6c
P2a
Bay
P2f
0
50
100
200
metres
63K/15-73-1
PALEOPROTEROZOIC
W6c Mafic phyllonite +/- carbonate, cataclasite
P10b Quartz porphyry, feldspar porphyry, quartz-feldspar porphyry dyke complex
P6c Leucotonalite
P2a Gabbro, diorite
P2f Diabase, diabase dyke complex
J6a Intermediate tuff, lapilli tuff, breccia
F4a Rhyolite to dacite flows, flow breccia
F1c Moen Bay pillowed basalt and breccia
F3c Long Bay ocean-island basalt conglomerate, sandstone
Geological contact (approximate)- NATMAP Shield Margin Project Working Group, 1998
Fault or shear zone margin (approximate)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 90517, 90643, 92654)
Drillhole (A.F. 90516, 92654)
73 Mineral occurrence location

Figure 73-1: Geological setting of occurrence 73.

LOCATION: 74

NAME: mineralization intersected by diamond drilling
UTM: 381370E, 6084605N
AREA: approximately 200 m NNW of Moen Bay, Elbow Lake
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage, then traverse
AIRPHOTO: MB90025-57

EXPLORATION SUMMARY

In 1956 Prospectors Airways Company Ltd. had VLEM (Crone) and ground magnetic surveys performed over the occurrence area (A.F. 90517). A drilling programme subsequently tested several of the conductive responses (A.F. 90516). In 1971 Noranda Exploration Company, Ltd. performed HLEM (Ronka Mk. III) surveys in the area. Some of the conductive responses were subsequently drilled by Manitoba Mineral Resources, Ltd. (A.F. 90643, 92654).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 74-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by quartz-phyric rhyolite to dacite flows and flow breccia (unit J4a). Intermediate tuff, lapilli tuff, crystal-lapilli tuff and breccia (unit J6a) occur to the west. Sparsely plagioclase megacrystic diabase (unit P2f) occurs to the east of the occurrence.

The lithologic description for hole #1 indicates the sequence that hosts the occurrence is dominated by "andesite" and "quartz diorite", with minor chlorite schist and "granodioritic" intervals (A.F. 90516). The chlorite schist probably represents shear strands originating from the Elbow Lake shear zone.

MINERALIZATION

Several intervals containing up to 30% pyrite and lesser graphite were intersected in hole #1 (A.F. 90516). The character of the mineralization is not well described.

GEOCHEMICAL DATA

Mineralized intervals in hole #1 were sampled and assay results reported (A.F. 90516), but the location of the samples was not specified. All assays returned low metal values (Cu<0.18%, Zn<0.12%, Ni<0.06%, Au<0.18 g/t, and tr Ag).

CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation.

REFERENCES

A.F. 90516, 90517, 90643, 92654; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

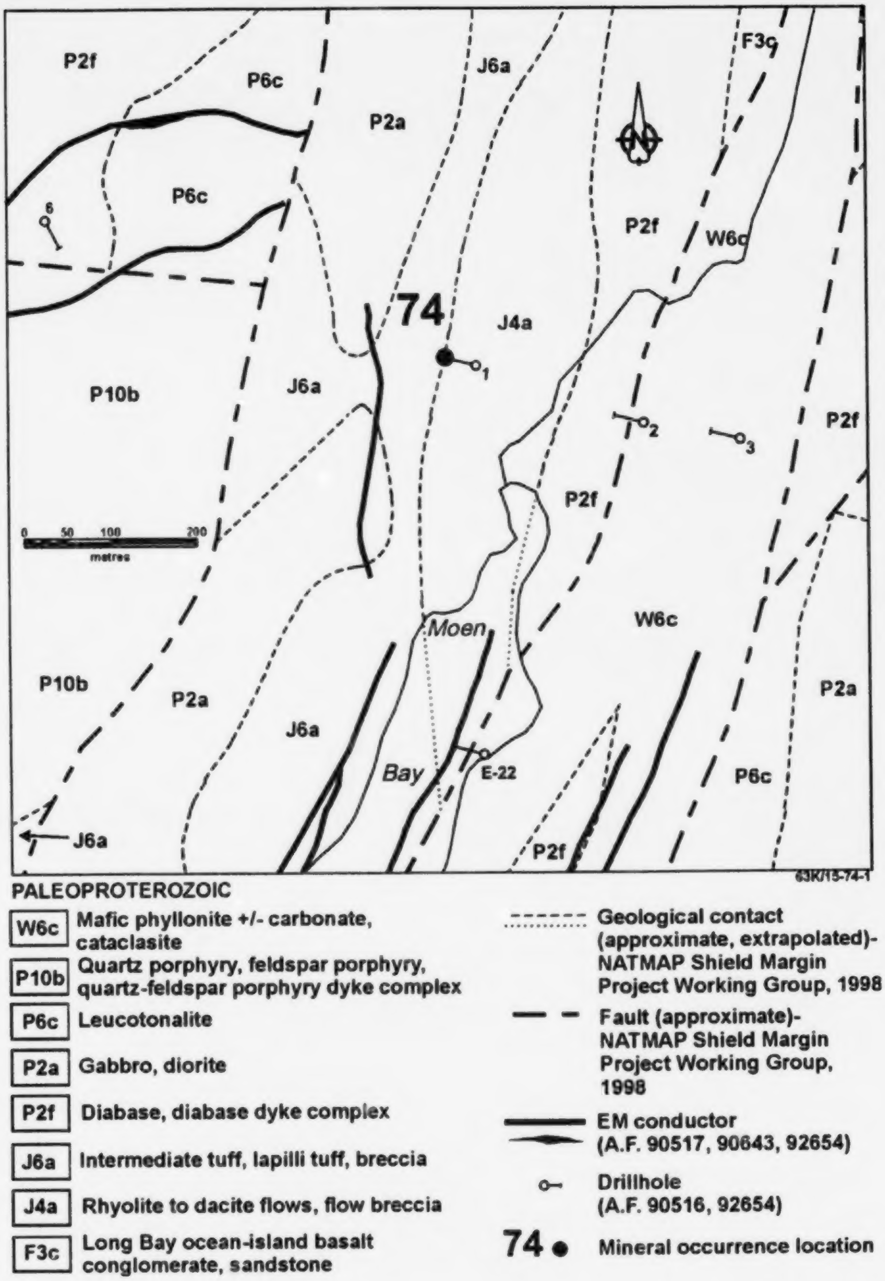

P2f
P6c
J6a
F3c
P2a
P6c
6
P2f
W6c
74
J4a
1
P10b
J6a
2
3
P2f
P2f
0 50 100 200
metres
Moen
W6c
P10b
P2a
J6a
P2a
Bay
E-22
P6c
J6a
P2f
63K/15-74-1
PALEOPROTEROZOIC
W6c Mafic phyllonite +/- carbonate, cataclasite
P10b Quartz porphyry, feldspar porphyry, quartz-feldspar porphyry dyke complex
P6c Leucotonalite
P2a Gabbro, diorite
P2f Diabase, diabase dyke complex
J6a Intermediate tuff, lapilli tuff, breccia
J4a Rhyolite to dacite flows, flow breccia
F3c Long Bay ocean-island basalt conglomerate, sandstone
Geological contact (approximate, extrapolated)- NATMAP Shield Margin Project Working Group, 1998
Fault (approximate)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 90517, 90643, 92654)
Drillhole (A.F. 90516, 92654)
74 ● Mineral occurrence location

Figure 74-1: Geological setting of occurrence 74.

LOCATION: 75

NAME: mineralization intersected by diamond drilling
UTM: 380850E, 6084625N
AREA: approximately 600 m WNW of Moen Bay, Elbow Lake
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage, then traverse
AIRPHOTO: MB90025-115

EXPLORATION SUMMARY

In 1956 Prospectors Airways Company Ltd. had VLEM (Crone) and ground magnetic surveys performed over the occurrence area (A.F. 90517). A drilling programme subsequently tested several of the conductive responses (A.F. 90516). In 1971 Noranda Exploration Company performed a ground HLEM (Ronka Mark III) and magnetic geophysical survey covering the north end of Elbow Lake (A.F. 92042).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 75-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by diabase and a diabase dyke complex (unit P2f). Fine-grained leucotonalite (unit P6c) underlies the area to the east of the occurrence.

The sequence intersected by hole #6 is dominated by "andesite", with lesser quartz-feldspar and quartz porphyry units (A.F. 90516). Minor graphitic sulphide-rich intervals are also present.

The litholog for hole E-4 indicates it is dominated by hornblende- and feldspar-phyric "andesite", with subordinate graphitic, banded and sheared "tuffs", and minor quartz-phyric "dacite" (A.F. 90643, 92654). It is unclear if the banded character of the "tuffs" is a primary depositional feature or the result of subsequent tectonic influences.

MINERALIZATION

Hole #6 intersected several thin (<150 cm) "massive" sulphide (pyrite+pyrrhotite±graphite) units (A.F. 90516). The character of the mineralization was not described, but occurs in association with both the mafic volcanic rocks and the porphyries.

Several thin (generally <1.5 m) sulphide-rich intervals, containing up to 50% pyrite associated with pyrrhotite, were intersected in hole E-4 (A.F. 90643, 92654). Graphite is an associated minor constituent. The character of the mineralization is not described, but is often associated with fine-grained, "well differentiated tuff".

GEOCHEMICAL DATA

The following assays were obtained from mineralized intervals sampled (A.F. 90516, 90643, 92654) (see table below).

Hole No.	Interval	%Cu	%Ni	Au	Ag
6	83.1-83.8 m (272.8-274.8 ft.)	0.20	0.14	tr	tr
	85.1-85.4 m (279.2-280.3 ft.)	0.15	0.06	tr	tr
	99.6-100.2 m (326.7-328.8 ft.)	0.18	0.11	tr	tr
	101.8-103.3 m (334.0-339.0 ft.)	0.18	0.09	0.01	tr
	103.3-104.6 m (339.0-343.2 ft.)	0.15	0.08	tr	tr
	109.7-111.3 m (360.0-365.0 ft.)	0.12	0.11	tr	tr
	118.1-118.6 m (387.5-389.0 ft.)	0.16	0.06		

Hole No.	Interval	%Cu	%Zn	%Ni	Au
E-4	22.6-23.9 m (74.1-78.5 ft.)	0.04	tr		nil
	25.7-26.2 m (84.4-85.9 ft.)	0.04	0.07		nil
	26.2-26.7 m (85.9-87.6 ft.)	0.04		0.02	
	28.7-29.1 m (94.0-95.5 ft.)	0.05	0.09		nil
	37.5-38.4 m (123.0-125.9 ft.)	0.05	0.16	0.03	0.34 g Au/t (0.01 oz. Au/ton)
	39.2-40.0 m (128.5-131.1 ft.)	0.03		0.02	0.34 g Au/t (0.01 oz. Au/ton)
	53.1-53.8 m (174.1-176.6 ft.)	0.06		0.03	tr
	53.8-54.9 m (176.6-180.2 ft.)	0.04	0.15		nil
	68.7-69.0 m (225.4-226.4 ft.)	0.04	0.02		nil
	75.3-75.7 m (247.2-248.5 ft.)	0.06	0.09	0.04	

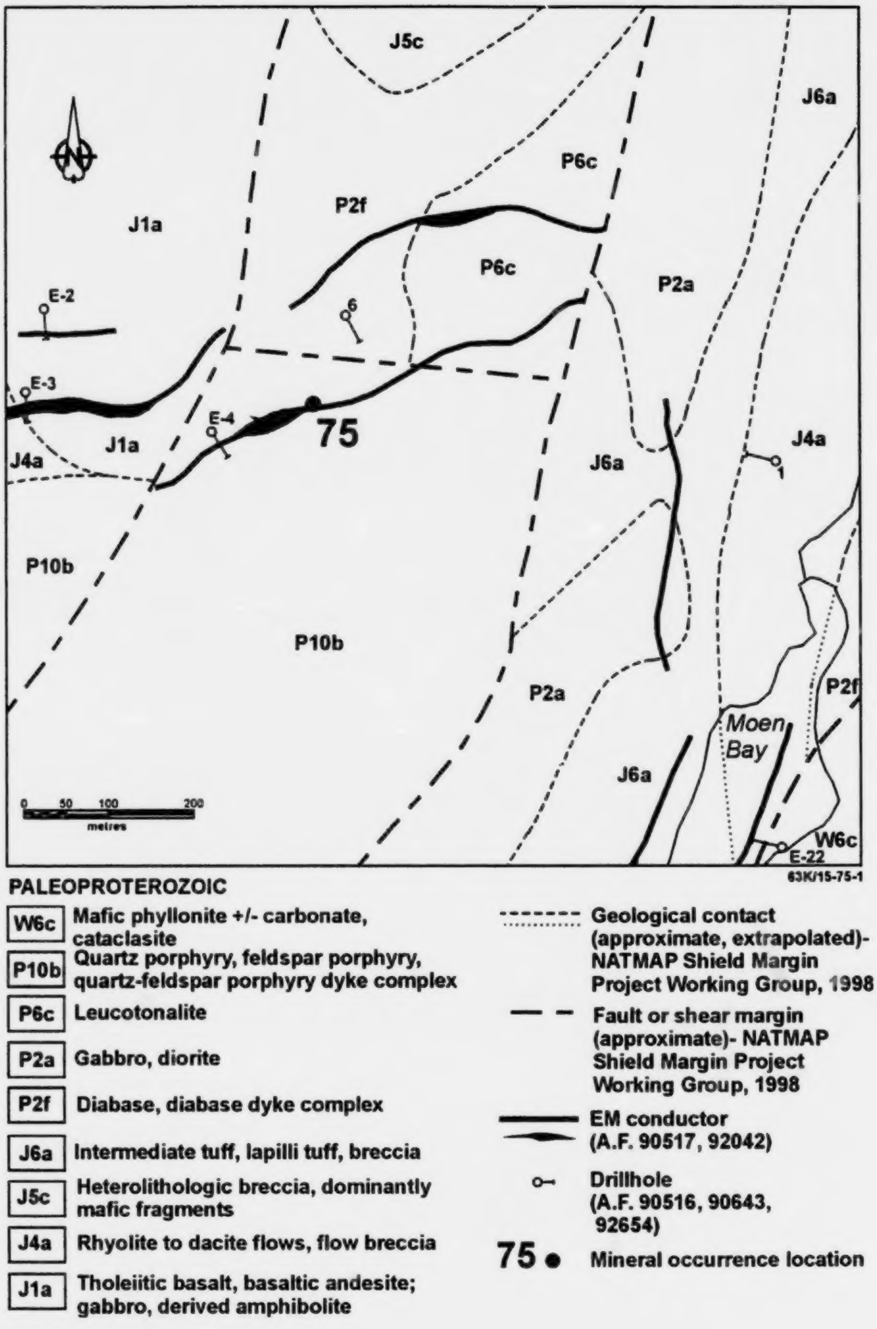

J5c
J6a
N
P6c
P2f
J1a
P6c
P2a
E-2
6
E-3
E-4
75
J1a
J4a
J6a
J4a
1
P10b
P10b
P2a
P2f
Moen Bay
J6a
0 50 100 200
metres
W6c
E-22
63K/15-75-1
PALEOPROTEROZOIC
W6c Mafic phyllonite +/- carbonate, cataclasite
P10b Quartz porphyry, feldspar porphyry, quartz-feldspar porphyry dyke complex
P6c Leucotonalite
P2a Gabbro, diorite
P2f Diabase, diabase dyke complex
J6a Intermediate tuff, lapilli tuff, breccia
J5c Heterolithologic breccia, dominantly mafic fragments
J4a Rhyolite to dacite flows, flow breccia
J1a Tholeiitic basalt, basaltic andesite; gabbro, derived amphibolite
Geological contact (approximate, extrapolated)- NATMAP Shield Margin Project Working Group, 1998
Fault or shear margin (approximate)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 90517, 92042)
Drillhole (A.F. 90516, 90643, 92654)
75 ● Mineral occurrence location

Figure 75-1: Geological setting of occurrence 75.

CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation.

REFERENCES

A.F. 90516, 90517, 90643, 92042 and 92654; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

LOCATION: 76

NAME: mineralization intersected by diamond drilling
UTM: 399670E, 6079345N
AREA: approximately 400 m N of North Star Lake
ACCESS: via bush aircraft to North Star Lake, then traverse
AIRPHOTO: MB90026-2

EXPLORATION SUMMARY

In 1958 Hudson Bay Exploration and Development Company, Limited drilled several EM conductors along the north side of North Star Lake (A.F. 90493). In 1981 an airborne EM (INPUT) and magnetic survey was performed for BP Minerals Limited, followed by a geological mapping programme (A.F. 92828).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 76-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by mafic tectonite with mafic to felsic intrusive sheets (unit W6b). These rocks lie within the West Reed North Star shear zone (Syme *et al.*, 1995a, b), a major kilometres thick tectonite that has been traced for more than 25 km from the Dow Lake area southward to the Phanerozoic cover. Despite the intense deformation that the rocks within this shear zone have been subjected to, Norquay *et al.* (1994a, b) were able to define the pre-deformational character of some of these units. They are located in the Central zone metasedimentary sequence. In the occurrence area the sequence consists of interlayered massive to layered amphibolite, massive to layered psammopelitic rocks, amphibolite with abundant epidote±quartz lenses, and layered quartz±feldspar-phyric rhyolite. A medium-grained gabbro intrusion (?) is also present.

The highly variable nature of this part of the sequence as indicated in outcrop was confirmed by the drill holes that intersected this occurrence. The core from holes A-1, -5, and -7 consists of quartz-biotite±garnet±chlorite "gneisses", amphibole-plagioclase±garnet±chlorite schists and "gneisses", feldspar porphyry, andesite, diorite, gabbro and quartz±garnet±biotite±sericite±chlorite±amphibole porphyry (A.F. 90493).

MINERALIZATION

Several mineralized intervals were intersected in holes A-1, -5 and -7 as follows (A.F. 90493) (see table below).

Hole No.	Interval	Mineralization
A-1	53.5-53.8 m (175.4-176.4 ft.)	"near solid" pyrite, minor chalcopyrite, in chloritic gabbro
	55.1-55.3 m (180.8-181.4 ft.)	pyrite with chalcopyrite, in chloritic gabbro
A-5	63.2-63.9 m (207.4-209.6 ft.)	"nearly solid" pyrrhotite, pyrite, minor chalcopyrite, in quartz-biotite "gneiss"
A-7	115.6-119.7 m (379.2-392.6 ft.)	"slight" to "well mineralized" pyrrhotite, pyrite, trace chalcopyrite, in amphibole-plagioclase-garnet "gneiss"

GEOCHEMICAL DATA

No assays were reported in the assessment file for these mineralized intervals.

CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation. This occurrence may be a vein system in gabbro. If this is the case, this occurrence may have some platinum-group element potential.

REFERENCES

A.F. 90493, 90643 and 92828; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Norquay, L.I., Prouse, D.E., and Gale, G.H.

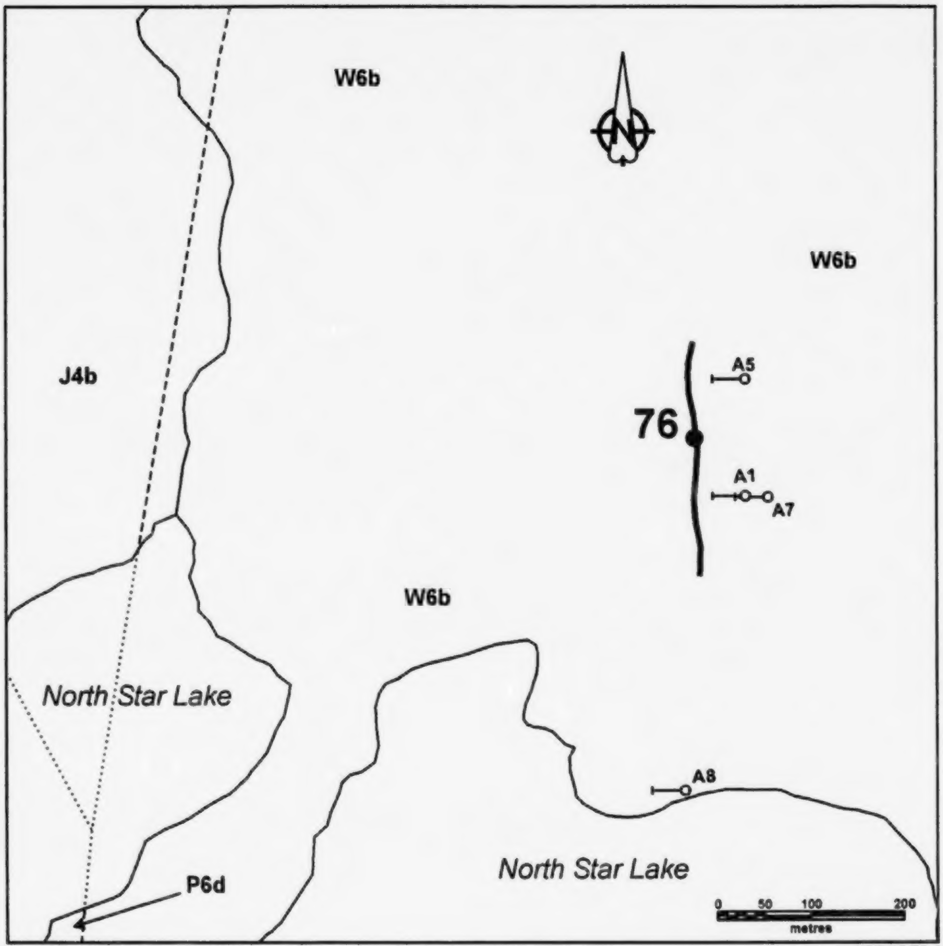
1994a: The North Star Lake project (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1994, pp. 83-84.

1994b: North Star Lake (NTS 63K/15NE1); Cancelled Assessment File, Manitoba Industry, Trade and Mines, Minerals Division, Preliminary Map 1994S-2, 1:10 000.

Syme, E.C., Bailes, A.H. and Lucas, S.B.

1995a: Geology of the Reed Lake area (Parts of 63K/9 and 10); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1995, pp. 42-60.

1995b: Geology of the Reed Lake area (Parts of 63K/9 and 10); Manitoba Energy and Mines, Minerals Division, Preliminary Map 1995F-1, 1:50 000.


W6b
N
W6b
J4b
A5
76
A1
A7
W6b
North Star Lake
A8
North Star Lake
P6d
0
50
100
200
metres
63K/15-76-1

PALEOPROTEROZOIC

W6b	Mafic tectonite with mafic-felsic intrusive sheets
P6d	Tonalite to quartz diorite

Juvenile Arc

J4b	Felsic gneiss +/- garnet +/- amphibole

-------	Geological contact (approximate, extrapolated)- NATMAP Shield Margin Project Working Group, 1998
▬▬▬	EM conductor (A.F. 90643)
	Drillhole [illegible]
76 ●	Mineral occurrence location

Figure 76-1: Geological setting of occurrence 76.

LOCATION: 77

NAME: mineralization intersected by diamond drilling
UTM: 380530E, 6084645N
AREA: approximately 900 m WNW of Moen Bay, Elbow Lake
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage, then traverse
AIRPHOTO: MB90025-115

EXPLORATION SUMMARY

In 1971 Noranda Exploration Company performed a ground HLEM (Ronka Mark III) and magnetic geophysical survey covering the north end of Elbow Lake (A.F. 92042). Some of the conductive responses were subsequently drilled by Manitoba Mineral Resources, Ltd. (A.F. 90643, 92654).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 77-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The occurrence is located near the boundary between basalt, basaltic andesite, gabbro and derived amphibolite (unit F1a) to the east and rhyolite to dacite flows and flow breccia (unit J4a) to the west. Diabase dyke (unit P2f) and felsic dyke (unit P10b) complexes occur to the east of the occurrence.

The litholog describing the host sequence for the occurrence indicates it consists of a mixed assemblage of "andesite", quartz and quartz-feldspar-phyric "dacite" to "rhyolite", and subordinate graphitic, banded and sheared "tuffs" (A.F. 90643, 92654). It is unclear if the banded character of the "tuffs" is a primary depositional feature or the result of subsequent tectonic influences.

MINERALIZATION

Several thin (generally <1.5 m) sulphide-rich intervals, containing up to 40% pyrite associated with pyrrhotite, were intersected in hole E-3 (A.F. 90643, 92654). Graphite is an associated minor constituent. The mineralization occurs as disseminations and irregular masses, and is often associated with fine-grained, finely laminated "tuff".

GEOCHEMICAL DATA

The following assays were obtained from mineralized intervals sampled drill hole E-3 (A.F. 90643, 92654):

Interval	%Cu	%Zn	Au
24.0-25.1 m (78.6-82.3 ft.)	0.04	0.50	nil
29.1-30.2 m (95.6-99.2 ft.)	0.07	0.05	tr
43.8-44.2 m (143.7-145.0 ft.)	0.04	0.21	nil
48.8-50.0 m (160.2-164.0 ft.)	0.02	0.16	
51.7-52.6 m (169.7-172.7 ft.)	0.04	0.15	tr

CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation. Graphite, possibly of biogenic origin, is a common minor constituent.

REFERENCES

A.F. 90516, 90643, 92042 and 92654; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

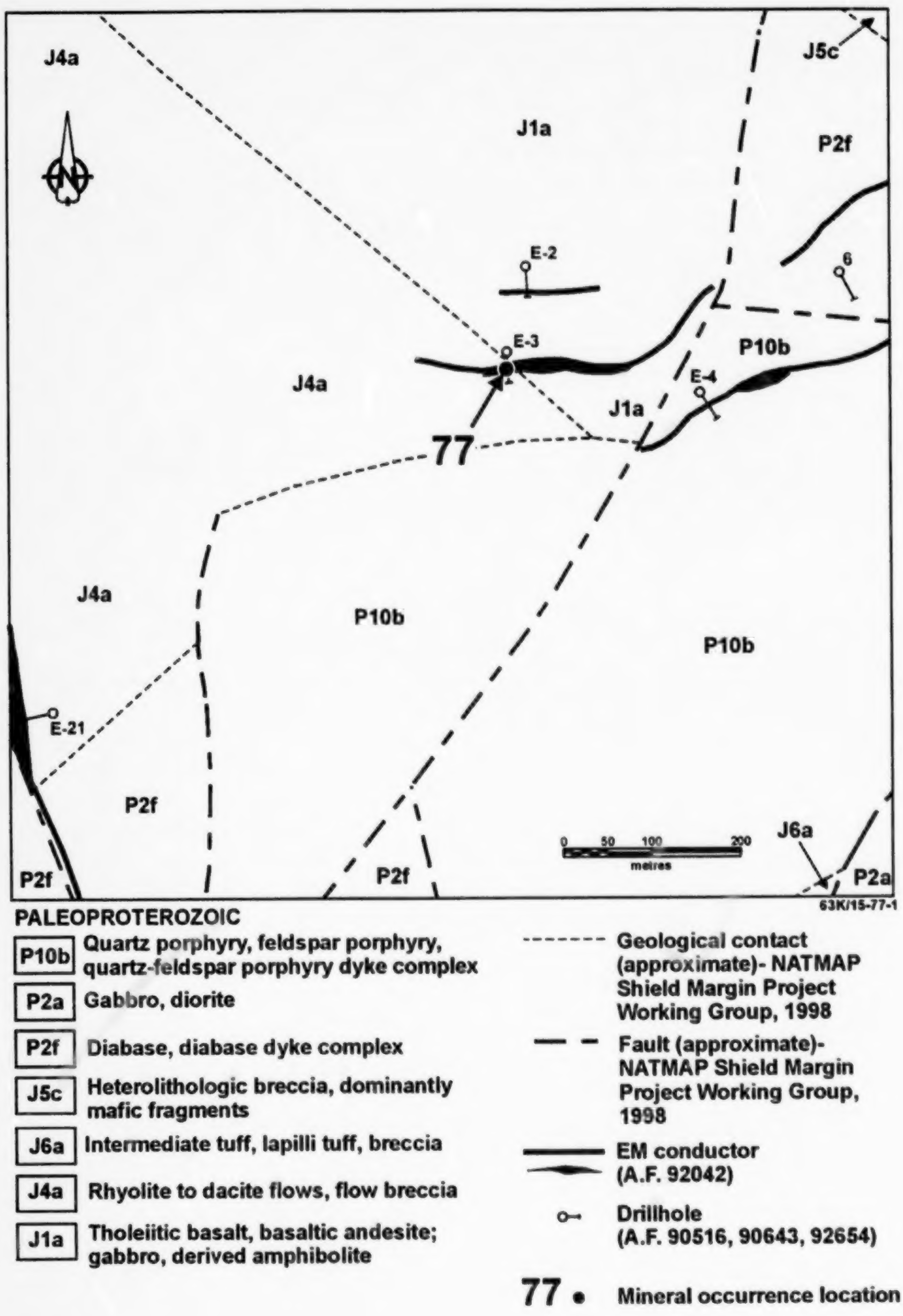

J4a
J1a
J5c
P2f
E-2
6
E-3
P10b
J4a
E-4
J1a
77
J4a
P10b
P10b
E-21
P2f
0 50 100 200
metres
J6a
P2f
P2f
P2a
63K/15-77-1
PALEOPROTEROZOIC
P10b Quartz porphyry, feldspar porphyry, quartz-feldspar porphyry dyke complex
P2a Gabbro, diorite
P2f Diabase, diabase dyke complex
J5c Heterolithologic breccia, dominantly mafic fragments
J6a Intermediate tuff, lapilli tuff, breccia
J4a Rhyolite to dacite flows, flow breccia
J1a Tholeiitic basalt, basaltic andesite; gabbro, derived amphibolite
Geological contact (approximate)- NATMAP Shield Margin Project Working Group, 1998
Fault (approximate)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 92042)
Drillhole (A.F. 90516, 90643, 92654)
77 ● Mineral occurrence location

Figure 77-1: Geological setting of occurrence 77.

LOCATION: 78

NAME: mineralization intersected by diamond drilling
UTM: 380550E, 6084735N
AREA: approximately 1.0 km WNW of Moen Bay, Elbow Lake
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage, then traverse
AIRPHOTO: MB90025-115

EXPLORATION SUMMARY

In 1971 Noranda Exploration Company performed a ground HLEM (Ronka Mark III) and magnetic geophysical survey covering the north end of Elbow Lake (A.F. 92042). Some of the conductive responses were subsequently drilled by Manitoba Mineral Resources, Ltd. (A.F. 90643, 92654).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 78-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The occurrence is located near the boundary between basalt, basaltic andesite, gabbro and derived amphibolite (unit F1a) to the east and rhyolite to dacite flows and flow breccia (unit J4a) to the west. Diabase dyke (unit P2f) and felsic dyke (unit P10b) complexes occur to the east of the occurrence.

The litholog describing the host sequence for the occurrence indicates it consists of a mixed assemblage of "andesite", "tuff", quartz-feldspar-amphibole-phyric "dacite", and "rhyolite" (A.F. 90643, 92654). It is unclear if the banded character of the "tuffs" is a primary depositional feature or the result of subsequent tectonic influences.

MINERALIZATION

Up to 50% pyrite occurs within a "tuff" interval in hole E-2, but its character is not described (A.F. 90643, 92654). Graphite is a minor constituent throughout this unit.

GEOCHEMICAL DATA

The following assays were obtained from mineralized intervals sampled drill hole E-2 (A.F. 90643, 92654):

Interval	%Cu	%Zn	Au
54.2-55.4 m (177.8-181.8 ft.)	0.20	0.05	nil
55.6-57.1 m (182.3-187.3 ft.)	0.09	0.11	nil
57.1-59.0 m (187.3-193.5 ft.)	0.08	0.07	nil

CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation. Graphite, possibly of biogenic origin, is a common minor constituent.

REFERENCES

A.F. 90643, 92042 and 92654; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

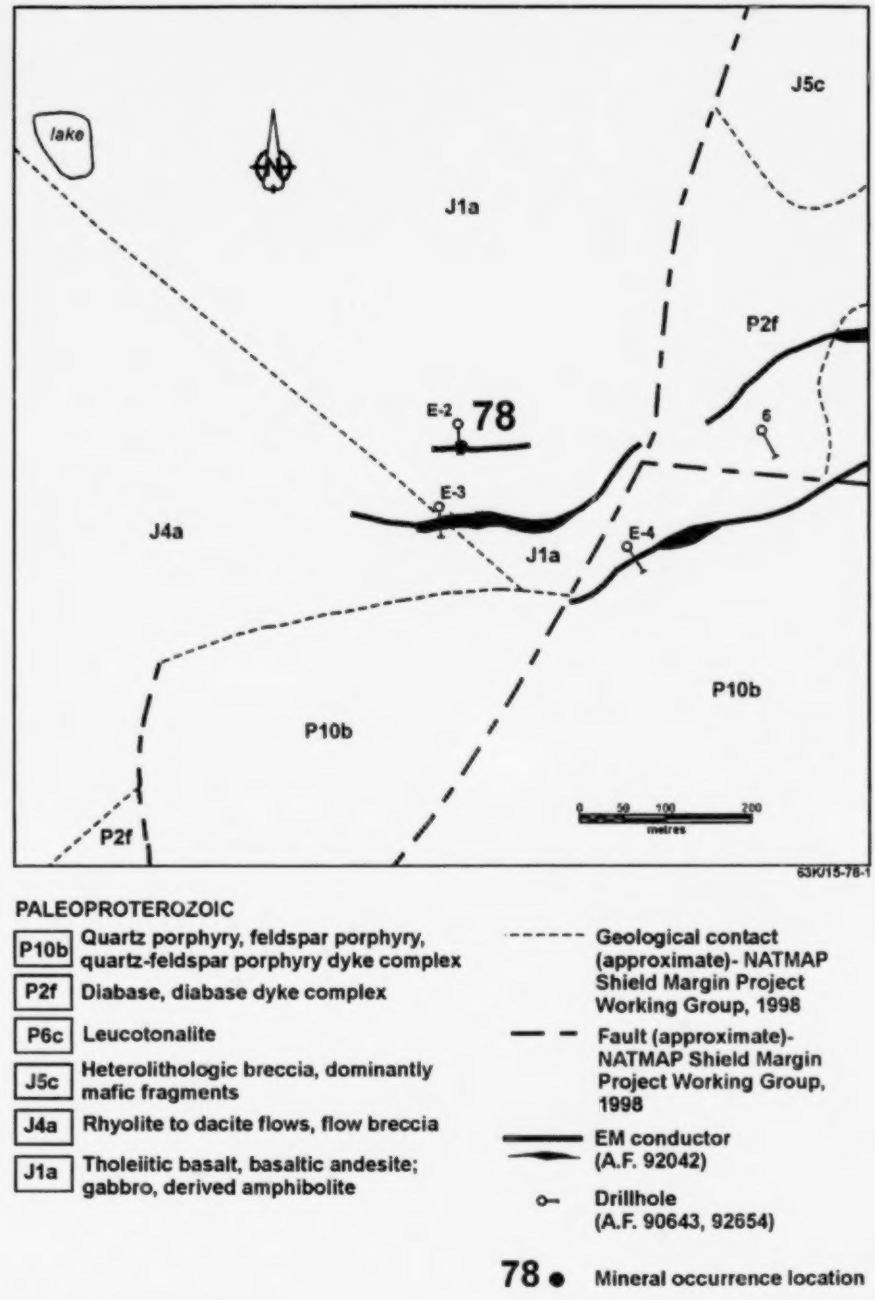

lake
N
J5c
J1a
P2f
E-2
78
6
E-3
J4a
J1a
E-4
P10b
P10b
P2f
0 50 100 200
metres
63K/15-78-1
PALEOPROTEROZOIC
P10b Quartz porphyry, feldspar porphyry, quartz-feldspar porphyry dyke complex
P2f Diabase, diabase dyke complex
P6c Leucotonalite
J5c Heterolithologic breccia, dominantly mafic fragments
J4a Rhyolite to dacite flows, flow breccia
J1a Tholeiitic basalt, basaltic andesite; gabbro, derived amphibolite
Geological contact (approximate)- NATMAP Shield Margin Project Working Group, 1998
Fault (approximate)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 92042)
Drillhole (A.F. 90643, 92654)
78 ● Mineral occurrence location

Figure 78-1: Geological setting of occurrence 78.

LOCATION: 79

NAME: mineralization intersected by diamond drilling

UTM: 380010E, 6084040N

AREA: approximately 1.3 km W of north end of Moen Bay, Elbow Lake

ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage, then traverse

AIRPHOTO: MB90025-115

EXPLORATION SUMMARY

In 1971 Noranda Exploration Company performed a ground HLEM (Ronka Mark III) and magnetic geophysical survey covering the north end of Elbow Lake (A.F. 92042). Some of the conductive responses were subsequently drilled by Manitoba Mineral Resources, Ltd. (A.F. 91487, 92654).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 79-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by diabase, andesite, rhyolite, fine-grained leucotonalite, plagioclase-amphibole porphyry, plagioclase porphyry, quartz-feldspar porphyry, and screens of pillowed basalt (grouped under unit J4a), and is part of the Tee Lake dyke complex. The "North Bay" intermediate crystal-lapilli tuff (unit J6a) is located to the west of the occurrence. Sparsely plagioclase megacrystic and oikocrystic diabase (unit P2f) occurs to the south. Massive aphyric Tee Lake rhyolite (unit J10b) is in fault contact with the Tee Lake dyke complex and diabase assemblage to the west.

Hole E-21 intersected a volcaniclastic sequence consisting of intermediate tuffaceous and coarser fragmental intervals, massive intermediate volcanic rocks, and massive and fragmental rhyolite (A.F. 92654). The tuffaceous intervals are described as being well bedded, but it is unclear if their banded character is a primary depositional feature or the result of subsequent tectonic influences.

MINERALIZATION

Several sulphide-rich intervals, containing up to 85% pyrite, occur in hole E-21. Graphite is a minor constituent of the mineralized units. The pyrite is finely laminated and is closely associated with the tuffaceous and felsic units.

GEOCHEMICAL DATA

The following assay was obtained from one of the mineralized intervals sampled (A.F. 92654):

Interval	%Cu	%Zn	Au
39.1-40.7 m (128.3-133.5 ft.)	0.03	0.03	tr

CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation. Graphite, possibly of biogenic origin, is a minor constituent.

REFERENCES

A.F. 91487, 92042, and 92654; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

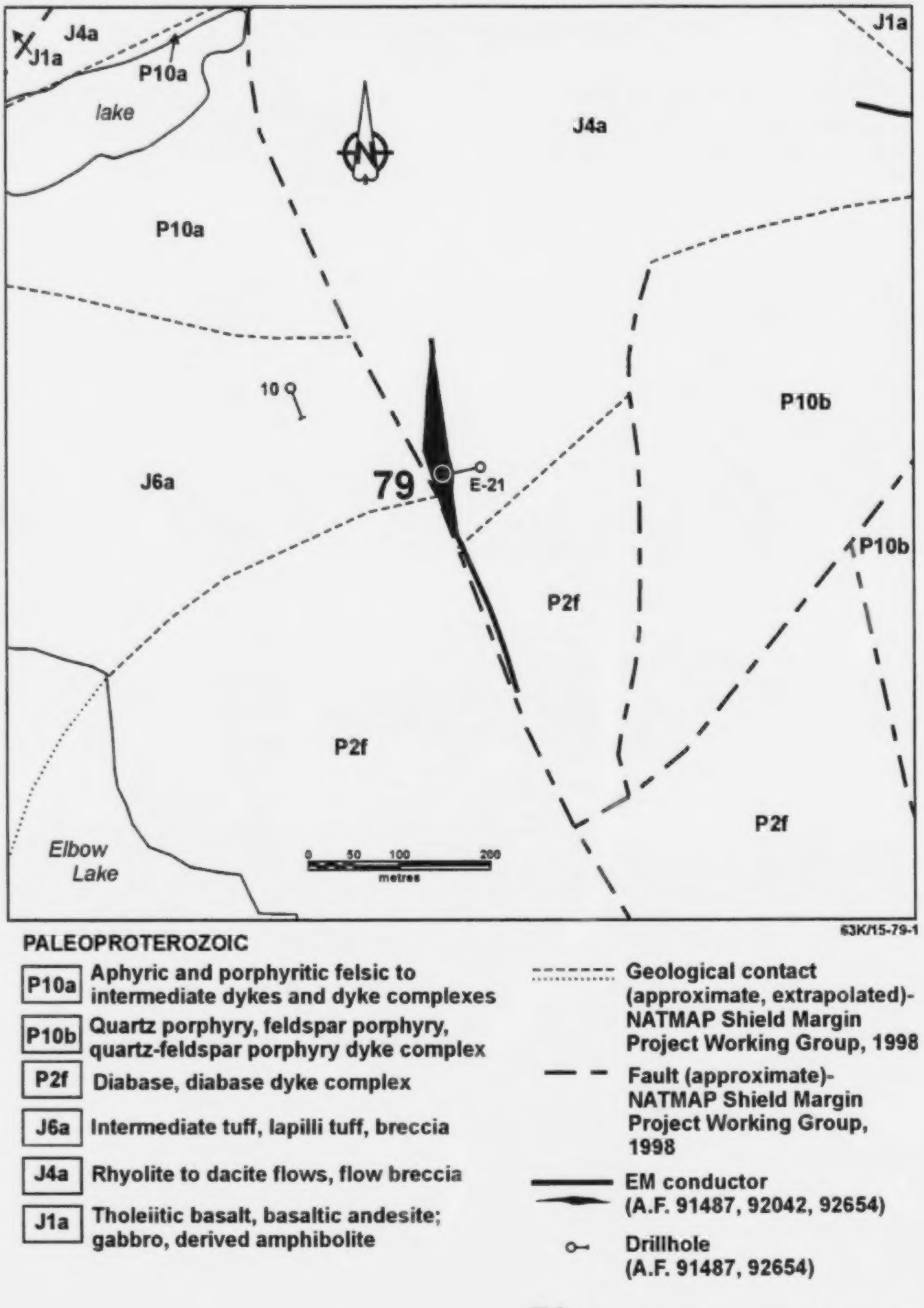

J4a
J1a
P10a
lake
J1a
J4a
P10a
10
J6a
79
E-21
P10b
P10b
P2f
P2f
P2f
Elbow Lake
0 50 100 200
metres
63K/15-79-1
PALEOPROTEROZOIC
P10a Aphyric and porphyritic felsic to intermediate dykes and dyke complexes
P10b Quartz porphyry, feldspar porphyry, quartz-feldspar porphyry dyke complex
P2f Diabase, diabase dyke complex
J6a Intermediate tuff, lapilli tuff, breccia
J4a Rhyolite to dacite flows, flow breccia
J1a Tholeiitic basalt, basaltic andesite; gabbro, derived amphibolite
Geological contact (approximate, extrapolated)- NATMAP Shield Margin Project Working Group, 1998
Fault (approximate)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 91487, 92042, 92654)
Drillhole (A.F. 91487, 92654)
79 Mineral occurrence location

Figure 79-1: Geological setting of occurrence 79.

LOCATION: 80

NAME: mineralization intersected by diamond drilling
UTM: 379765E, 6084305N
AREA: approximately 300 m N of bay west of Moen Bay, Elbow Lake
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage, then traverse
AIRPHOTO: MB90025-115

EXPLORATION SUMMARY

In 1957 Prospectors Airways Company Ltd. drilled a hole at the occurrence (A.F. 90504). In 1971 Noranda Exploration Company performed a ground HLEM (Ronka Mark III) and magnetic geophysical survey covering the north end of Elbow Lake (A.F. 92042).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 80-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by the "North Bay" intermediate crystal-lapilli tuff (unit J6a). Sparsely plagioclase megacrystic and oikocrystic diabase (unit P2f) occurs to the south, and the Tee Lake dyke complex, consisting of diabase, andesite, rhyolite, fine-grained leucotonalite, plagioclase-amphibole porphyry, plagioclase porphyry, quartz-feldspar porphyry, and screens of pillowed basalt (grouped under unit P10a) occurs to the north. Massive aphyric Tee Lake rhyolite (unit J4a) is in fault contact with the "North Bay" tuff to the east.

Hole #10 intersected intermediate to felsic volcanic rocks and tuffaceous and coarser fragmental equivalents (A.F. 90504). Graphite is a common minor constituent in many of the units.

MINERALIZATION

Several "massive" pyrite+graphite - rich units were intersected in hole #10 at the following intervals: 110.6-124.5 m (363.0-408.5 ft.); 138.1-160.3 m (453.0-526.0 ft.); 175.3-184.4 m (575.0-605.0 ft.); 203.3-204.8 m (667.0-672.0 ft.) (A.F. 90504).

GEOCHEMICAL DATA

The following assays were obtained from mineralized intervals sampled (A.F. 90504) (see table below).

Interval	%Cu	%Zn	%Ni	g Au/t (oz./ton)	g Ag/t (oz./ton)
111.2-111.6 m (364.7-366.2 ft.)	0.07	nil	0.06	0.68 (0.02)	1.37 (0.04)
115.4-116.9 m (378.5-383.5 ft.)	0.12	0.20	0.10	0.68 (0.02)	9.59(0.28)
121.3-122.8 m (398.0-403.0 ft.)	0.10	0.30	0.08	tr	1.37 (0.04)
122.8-124.5 m (403.0-408.5 ft.)	0.07	0.30	0.08	0.34 (0.01)	2.05 (0.06)
138.1-139.6 m (453.0-458.0 ft.)	0.07	0.20	0.08	tr	2.05 (0.06)

CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation. Graphite, possibly of biogenic origin, is a major constituent.

REFERENCES

A.F. 90504 and 92042; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

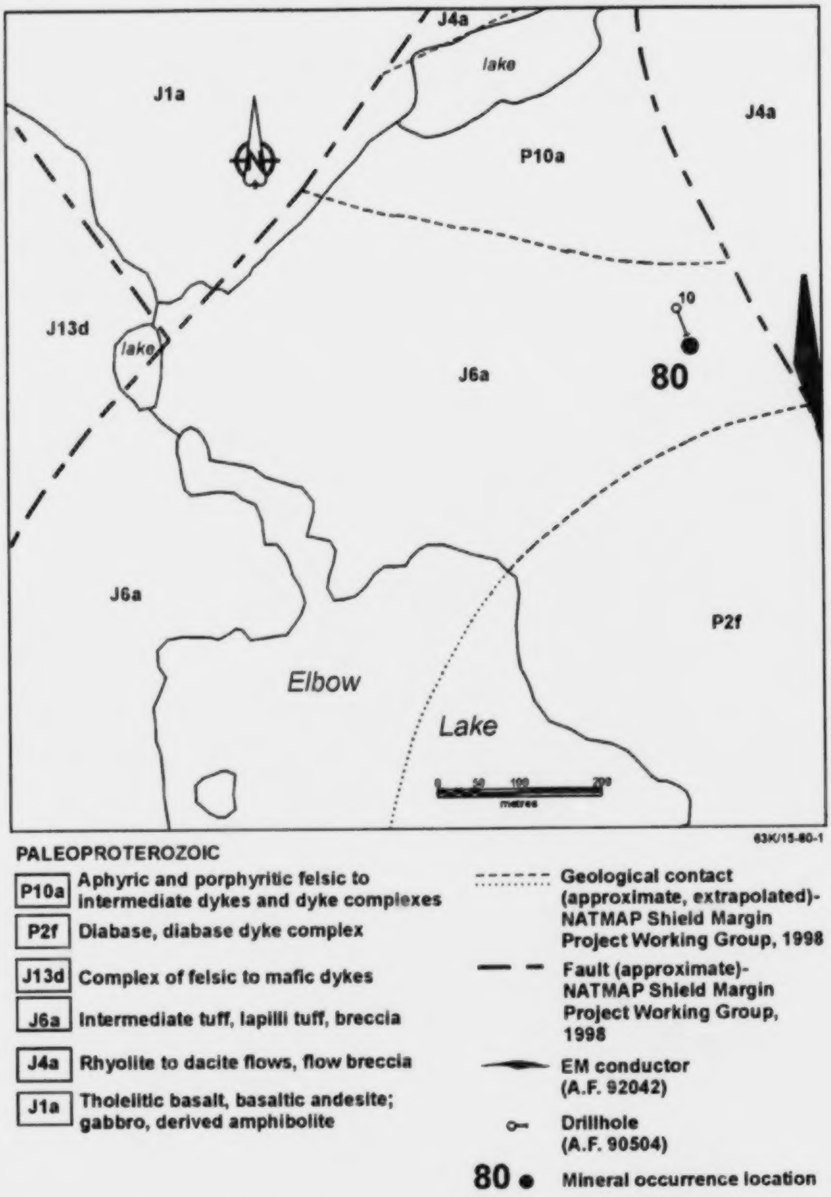

J4a
lake
J1a
J4a
P10a
10
J13d
lake
J6a
80
J6a
P2f
Elbow
Lake
0 50 100 200
metres
63K/15-80-1
PALEOPROTEROZOIC
P10a Aphyric and porphyritic felsic to intermediate dykes and dyke complexes
P2f Diabase, diabase dyke complex
J13d Complex of felsic to mafic dykes
J6a Intermediate tuff, lapilli tuff, breccia
J4a Rhyolite to dacite flows, flow breccia
J1a Tholeiitic basalt, basaltic andesite; gabbro, derived amphibolite
Geological contact (approximate, extrapolated)- NATMAP Shield Margin Project Working Group, 1998
Fault (approximate)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 92042)
Drillhole (A.F. 90504)
80 ● Mineral occurrence location

Figure 80-1: Geological setting of occurrence 80.

LOCATION: 81

NAME: mineralization intersected by diamond drilling
UTM: 379510E, 6083265N
AREA: under bay W of Moen Bay, Elbow Lake
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage
AIRPHOTO: MB90025-115

EXPLORATION SUMMARY

In 1971 Noranda Exploration Company performed a ground HLEM (Ronka Mark III) and magnetic geophysical survey covering the north end of Elbow Lake (A.F. 92042). Some of the conductive responses were subsequently drilled by Manitoba Mineral Resources, Ltd. (A.F. 91487, 92654).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 81-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by sparsely plagioclase megacrystic and oikocrystic diabase (unit P2f). The "North Bay" intermediate crystal-lapilli tuff (unit J6a) occurs to the west. An enclave of Long Bay basaltic conglomerate (unit F3c) outcrops NE of the occurrence.

Hole E-25 intersected a sequence consisting of intermediate to felsic, finely layered tuff, intermediate volcanic rocks ("dacite" and "andesite"), and feldspar porphyry (A.F. 92654).

MINERALIZATION

One 1.5 m (5.0 ft.) interval with 80% fine-grained, finely bedded, "massive" pyrite was intersected in hole E-25 (A.F. 92654). This interval also contains 15% graphite.

GEOCHEMICAL DATA

The following assay was obtained from the mineralized interval (A.F. 92654):

Interval	%Cu	%Zn	Au
34.2-35.7 m (112.2-117.2 ft.)	0.05	0.02	tr

CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation. Graphite, possibly of biogenic origin, is a major constituent.

REFERENCES

A.F. 91487, 92042, and 92654; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

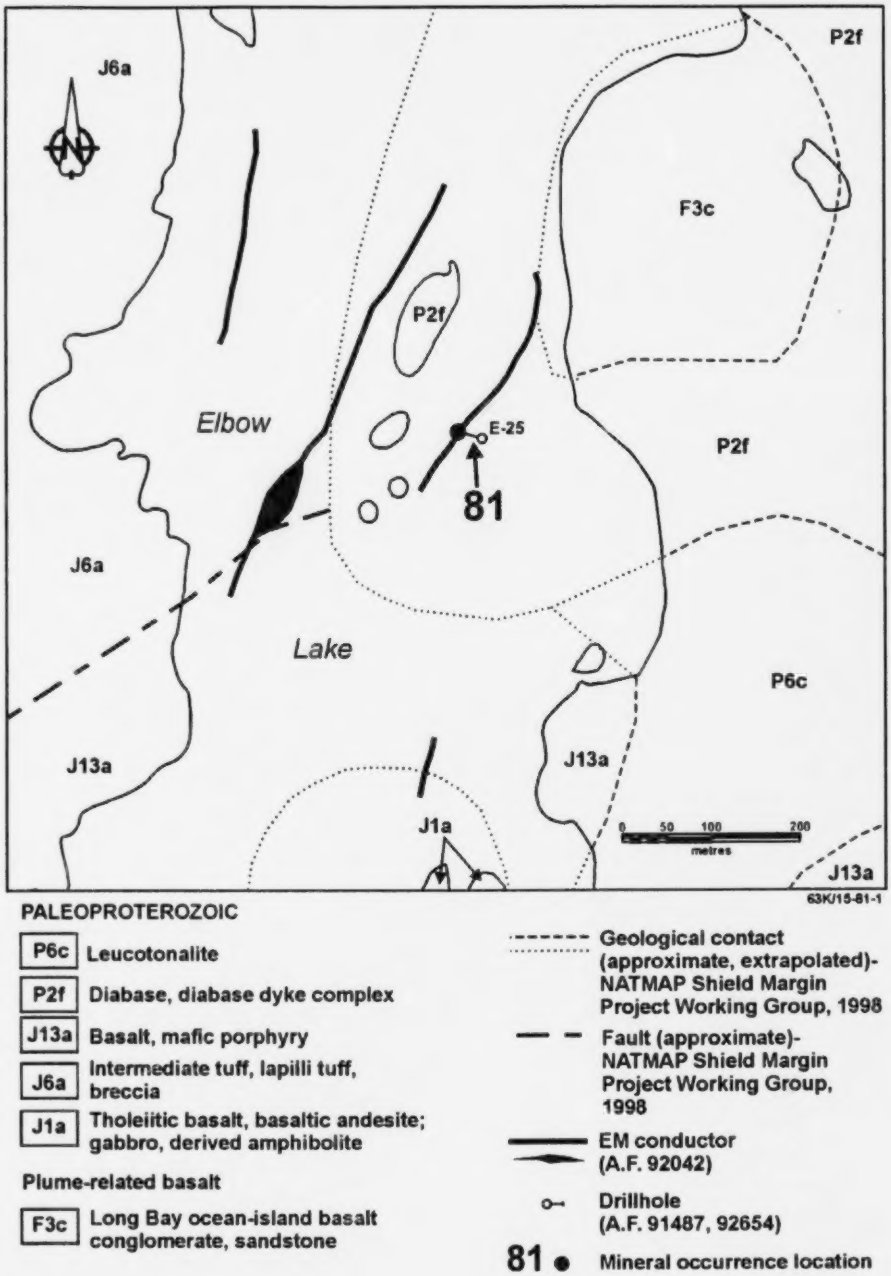

J6a
P2f
F3c
P2f
Elbow
E-25
81
P2f
J6a
Lake
P6c
J13a
J13a
J1a
0 50 100 200
metres
J13a
63K/15-81-1
PALEOPROTEROZOIC
P6c Leucotonalite
P2f Diabase, diabase dyke complex
J13a Basalt, mafic porphyry
J6a Intermediate tuff, lapilli tuff, breccia
J1a Tholeiitic basalt, basaltic andesite; gabbro, derived amphibolite
Plume-related basalt
F3c Long Bay ocean-island basalt conglomerate, sandstone
Geological contact (approximate, extrapolated)- NATMAP Shield Margin Project Working Group, 1998
Fault (approximate)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 92042)
Drillhole (A.F. 91487, 92654)
81 ● Mineral occurrence location

Figure 81-1: Geological setting of occurrence 81.

LOCATION: 82

NAME: mineralization intersected by diamond drilling
UTM: 377750E, 6077120N
AREA: under Elbow Lake, W of McDougalls Point
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage
AIRPHOTO: MB90025-136

EXPLORATION SUMMARY

In 1972-73 Manitoba Mineral Resources Ltd. performed an HLEM survey utilizing Geonics EM-17 and ABEM GUN equipment (A.F. 92149). Most of the conductors outlined by this survey were drill tested in 1974 (A.F. 92148, 92654).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 82-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by pillowed and massive aphyric flows of the McDougalls Point basalt (unit F1a). This unit is cut by a NNE-trending fault to the ESE of the occurrence. Dark pink to red, foliated, coarse-grained, equigranular to subporphyritic hornblende-biotite granodiorite of the Big Rat Lake pluton (unit P7a) occurs to the west.

Hole E-53 intersected a sequence consisting of massive to schistose mafic volcanic rocks with minor massive and "tuffaceous" rhyolitic intervals (A.F. 92654). Two schistose graphitic units containing massive mafic and felsic volcanic rocks are also present. Granodiorite, probably part of the Big Rat Lake pluton, was intersected near the top of the hole. The bottom of the hole intersected interbedded "siltstone" and "quartzite". It is unclear if their bedded character is a primary depositional feature or the result of subsequent tectonic influences.

MINERALIZATION

Two intervals containing 5-10%, and locally up to 30%, pyrite as fine stringers in graphitic schist were intersected in hole E-53 (A.F. 92654). These occur between 63.4-102.4 m (208.0-336.0 ft.), and 110.6-114.6 m (363.0-376.0 ft.).

GEOCHEMICAL DATA

No assays were reported in the assessment file for any of the mineralized intervals.

CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation. The presence of graphite suggests a biogenic contribution to the associated lithologies.

REFERENCES

A.F. 91487, 92148, 92149 and 92654; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

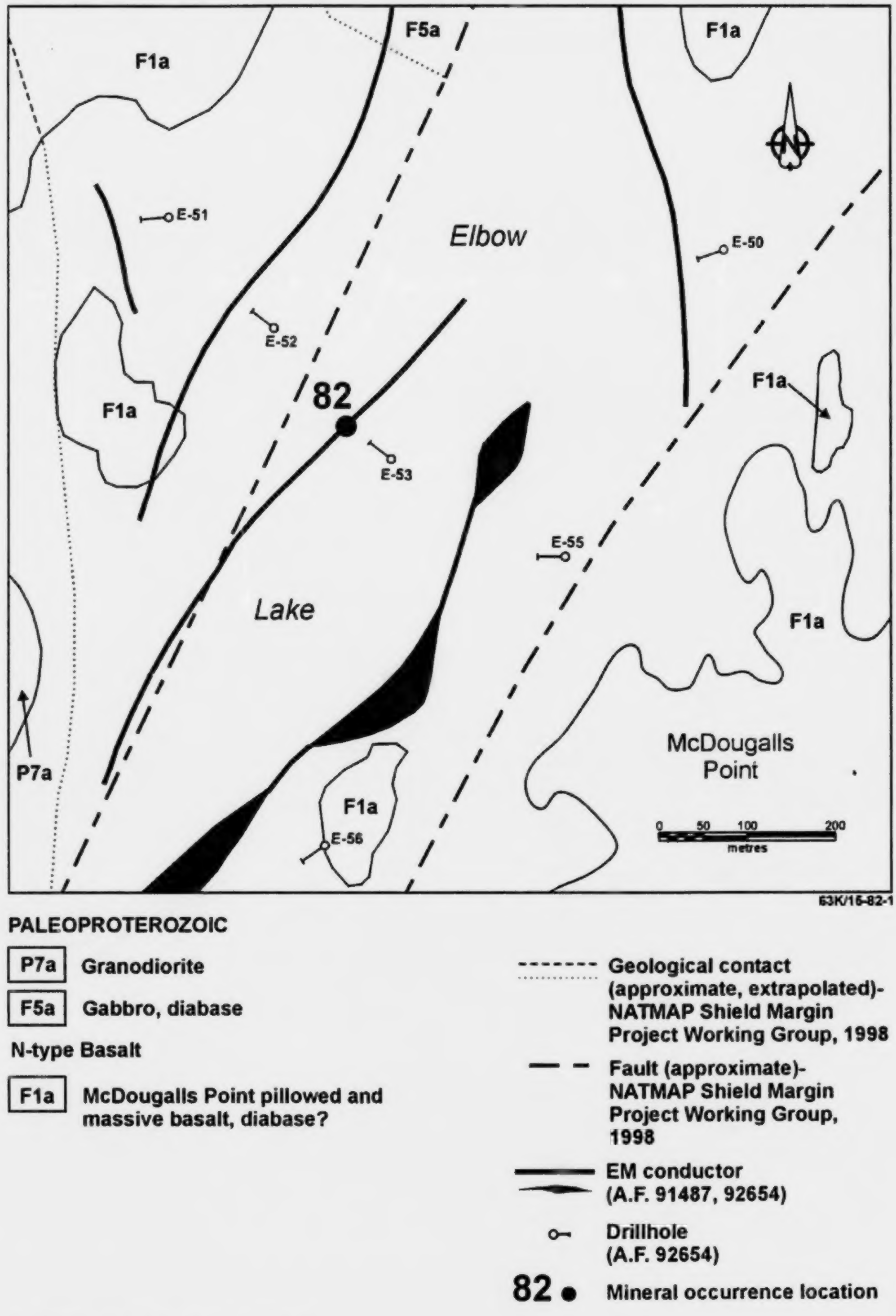

F1a
F5a
F1a
Elbow
E-51
E-50
E-52
82
F1a
F1a
E-53
E-55
Lake
F1a
P7a
McDougalls Point
F1a
E-56
0 50 100 200
metres
63K/16-82-1
PALEOPROTEROZOIC
P7a Granodiorite
F5a Gabbro, diabase
N-type Basalt
F1a McDougalls Point pillowed and massive basalt, diabase?
Geological contact (approximate, extrapolated)-NATMAP Shield Margin Project Working Group, 1998
Fault (approximate)-NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 91487, 92654)
Drillhole (A.F. 92654)
82 ● Mineral occurrence location

Figure 82-1: Geological setting of occurrence 82.

LOCATION: 83

NAME: Webb ("Bay", "Two Dogs" and "Creek") occurrence
UTM: 375550E, 6087465N
AREA: along west shore of unnamed lake, approximately 800 m SSW of Webb Lake
ACCESS: via bush aircraft, then traverse
AIRPHOTO: MB90025-196

EXPLORATION SUMMARY

In 1936 J. Macdougall staked a claim in the area. Some trenching appears to have been undertaken in the 1940's and 50's, but has not been recorded in the assessment files. In 1971 Noranda Exploration Company performed a ground HLEM (Ronka Mark III) and magnetic geophysical survey covering the north end of Elbow Lake (A.F. 92042). Some of the conductive responses were subsequently drilled by Manitoba Mineral Resources, Ltd., but no assessment work for the area covering the occurrence was filed. In 1973 Sherritt Gordon Mines carried out airborne EM and magnetic surveys under Airborne Permit No. 114 (A.F. 92020). In 1982-83 Granges Exploration Ltd. completed a geophysical survey over the area (A.F. 92997). Westfield Minerals Limited undertook a mapping and sampling programme in 1987 (A.F. 92997).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 83-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area was mapped by Schledewitz (1993a, b), who indicates it is underlain by mafic tectonite derived from mafic volcanic flows. To the east the sequence consists of foliated, homogeneous, mafic flows with isolated pillows. Hornblende-plagioclase-phyric volcaniclastic rocks with abundant hornblende-plagioclase- and plagioclase-phyric intermediate dykes and sills (unit P2f), and quartz-phyric rhyodacite also occur in the eastern sequence. This assemblage is grouped under unit J13d. The Echo Lake pluton is separated from the supracrustal sequence to the east by the Webb Creek fault, a structure that has been traced southward to west of Long Bay on Elbow Lake.

The occurrence is located within chloritic, well foliated, mafic tectonite that comprises the Webb Creek fault. This fault is coincident with HLEM conductors at and south of the occurrence.

MINERALIZATION

The northernmost part of the Webb occurrence is exposed in two trenches along the NW shoreline of the lake (unofficial name J.S. Lake) SSW of Webb Lake ("Bay" showing, A.F. 92997). It consists of a massive pyrrhotite lens with minor pyrite and chalcopyrite. The lens contains quartz inclusions and is cut by fine-grained chlorite and quartz stringers.

A limonitic, gossanous area, formed from weathering sulphides, is exposed in a group of seven trenches ("Two Dogs" showing, A.F. 92997) along the west shoreline of J.S. Lake. Pyrrhotite, pyrite and minor chalcopyrite are present (A.F. 92997).

The southernmost part of the Webb occurrence ("Creek" showing, A.F. 92997) is exposed in two trenches at the head of the creek draining from the SW side of J.S. Lake. The trenches expose sulphide-bearing quartz veins in mafic phyllonite. The sheared rock contains pods, lenses and stringers of "massive" and "semi-massive" pyrite and pyrrhotite.

GEOCHEMICAL DATA

Chip and grab samples of quartz vein and sulphide-rich material were collected from various locations at the occurrence. Assay values ranged between 0.342-7.425 g Au/t (0.001-0.217 oz. Au/ton). Most values fall into the lower part of this range, and the assays average 0.479 g Au/t (0.014 oz. Au/ton).

CLASSIFICATION

Stratabound massive sulphide type deposit; volcanic rock associated. Deposit has been considerably modified, in part by deformation along the Webb Creek fault.

REFERENCES

A.F. 92020, 92042 and 92997; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Schledewitz, D.C.P.

1993a: Geology of the Webb Lake-Fay Lake area (NTS 63K/14NE and 63K/15NW); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1993, pp. 29-32.

1993b: Webb Lake-Fay Lake (east half); Manitoba Energy and Mines, Minerals Division, Preliminary Map 1993-K4 (NTS 63K/15NW), 1:20 000.

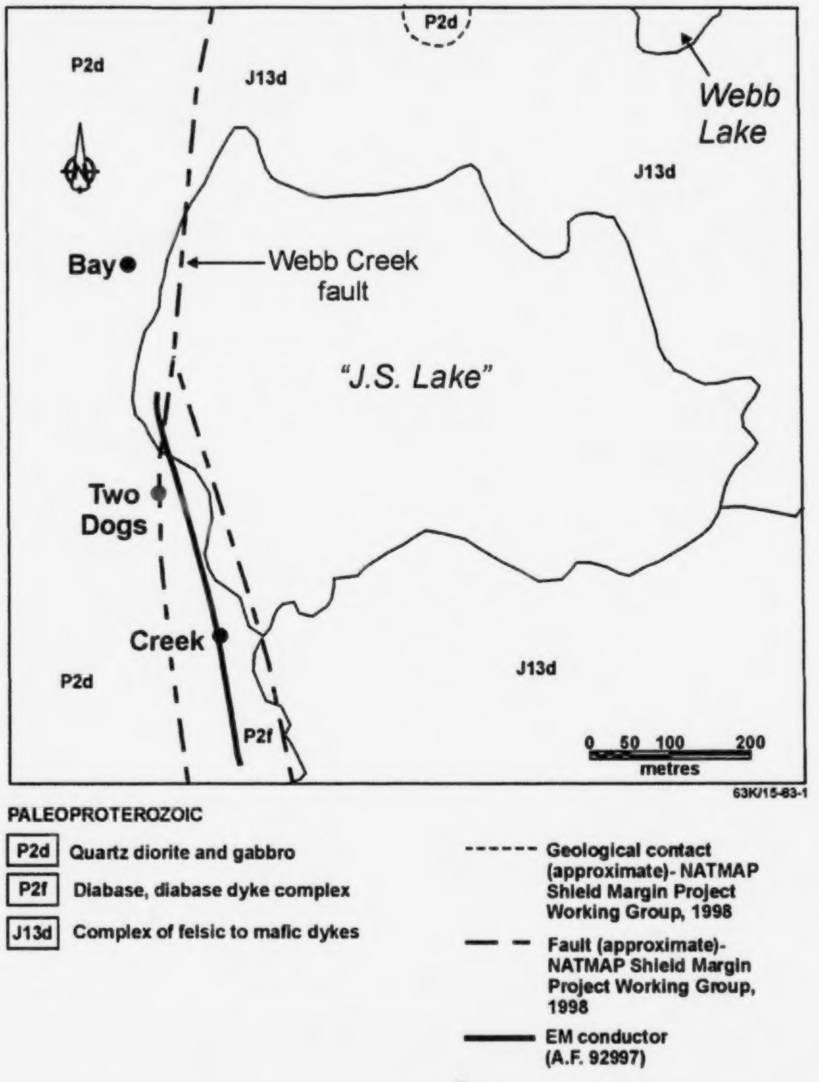

P2d
P2d
J13d
Webb Lake
J13d
Bay
Webb Creek fault
"J.S. Lake"
Two Dogs
Creek
P2d
J13d
P2f
0 50 100 200
metres
63K/15-83-1
PALEOPROTEROZOIC
P2d Quartz diorite and gabbro
P2f Diabase, diabase dyke complex
J13d Complex of felsic to mafic dykes
Geological contact (approximate)- NATMAP Shield Margin Project Working Group, 1998
Fault (approximate)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 92997)
Bay Mineral occurrence location

Figure 83-1: General geology at occurrence 83 (Bay, Two Dogs, Creek).

LOCATION: 84

NAME: mineralization intersected by diamond drilling
UTM: 381400E, 6084145N
AREA: under north end of Moen Bay, Elbow Lake, along east side
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage
AIRPHOTO: MB90025-57

EXPLORATION SUMMARY

In 1971 Noranda Exploration Company performed a ground HLEM (Ronka Mark III) and magnetic geophysical survey covering the north end of Elbow Lake (A.F. 92042). Some of the conductive responses were subsequently drilled by Manitoba Mineral Resources, Ltd. (A.F. 91487, 92654).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 84-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by rhyolite to dacite flows and flow breccia (unit J4a) and intermediate tuff, lapilli tuff and breccia (unit J6a), which comprise part of the "North Bay" assemblage. Sparsely plagioclase mega-crystic diabase (unit P2f) occurs to the NNE, and mafic phyllonites (unit W6c) of the Elbow Lake shear zone (Galley *et al.*, 1987, 1989; Syme, 1990, 1991, 1992) occur a short distance to the east.

The litholog for hole E-22 indicates the sequence associated with the occurrence mineralization consists of rhyolitic "tuff" and banded dacite with minor massive "andesite" (A.F. 92654). The banded character of the units many be a tectonic feature, given the proximity of the Elbow Lake shear zone, and may not be a primary depositional fabric.

MINERALIZATION

An interval containing up to 50% pyrite concentrated in 2.5 cm bands was intersected between 39.4-40.7 m (129.3-133.5 ft.) in hole E-22 (A.F. 92654).

GEOCHEMICAL DATA

The following assay was obtained from the mineralized interval (A.F. 92654):

Hole No.	Interval	%Cu	%Zn	Au
E-22	39.4-40.7 m (129.3-133.5 ft.)	0.03	0.03	tr

CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation. Deposit appears to have been considerably modified, in part by deformation along the Elbow Lake shear zone.

REFERENCES

A.F. 90516, 91487, 92042 and 92654; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Galley, A.G., Ames, D.E. and Franklin, J.M.

1987: Geological setting of gold mineralization in the Elbow Lake region, Manitoba; in Manitoba Energy and Mines, Minerals Division, Report of Field Activities, 1987, pp.175-177.

1989: Results of studies on the gold metallogeny of the Flin Flon belt; in Investigations by the Geological Survey of Canada in Manitoba and Saskatchewan during the 1984-1989 Mineral Development Agreements, Geological Survey of Canada, Open File 2133, pp.25-32.

Syme, E.C.

1990: Elbow Lake project (part of NTS 63K/15W); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1990, pp.49-57.

1991: Elbow Lake project - Part A: supracrustal rocks and structural setting; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1991, pp.14-27.

1992: Elbow Lake Project - Part A: Supracrustal rocks; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1992, pp.32-46.

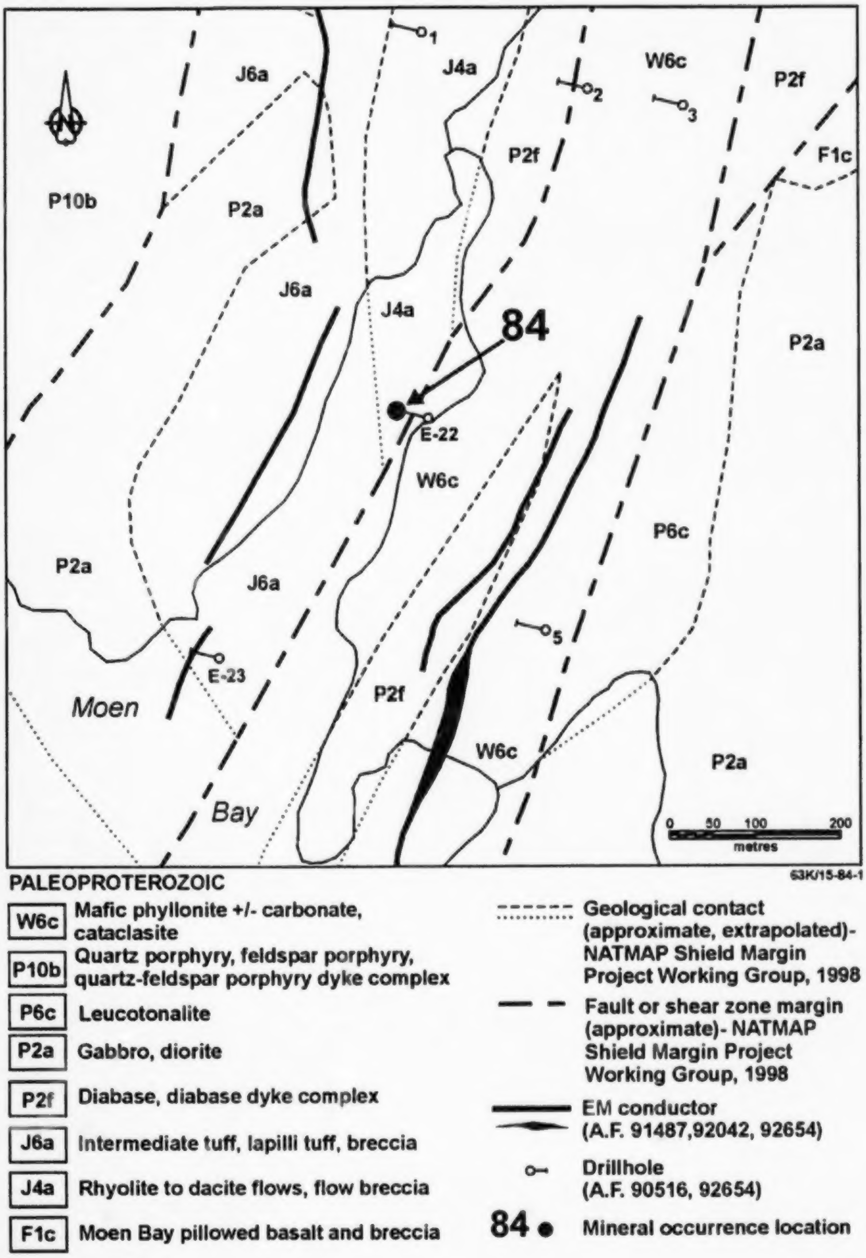

J6a
J4a
W6c
P2f
P10b
P2a
F1c
1
2
3
84
E-22
J6a
J4a
P2a
W6c
P6c
P2a
J6a
E-23
Moen
P2f
5
W6c
P2a
Bay
0 50 100 200
metres
63K/15-84-1
PALEOPROTEROZOIC
W6c Mafic phyllonite +/- carbonate, cataclasite
P10b Quartz porphyry, feldspar porphyry, quartz-feldspar porphyry dyke complex
P6c Leucotonalite
P2a Gabbro, diorite
P2f Diabase, diabase dyke complex
J6a Intermediate tuff, lapilli tuff, breccia
J4a Rhyolite to dacite flows, flow breccia
F1c Moen Bay pillowed basalt and breccia
Geological contact (approximate, extrapolated)- NATMAP Shield Margin Project Working Group, 1998
Fault or shear zone margin (approximate)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 91487,92042, 92654)
Drillhole (A.F. 90516, 92654)
84 ● Mineral occurrence location

Figure 84-1: Geological setting of occurrence 84.

LOCATION: 85

NAME: mineralization intersected by diamond drilling
UTM: 377400E, 6082825N
AREA: near NW shore of Elbow Lake, approximately 800 m NW of shoreline NW of Webb Island
ACCESS: via bush plane or by boat through the Cranberry Lakes from Cranberry Portage, then traverse
AIRPHOTO: MB90025-140

EXPLORATION SUMMARY

In 1971 Noranda Exploration Company performed a ground HLEM (Ronka Mark III) geophysical survey covering Long Bay on Elbow Lake and an area to the north of Long Bay (A.F. 91954). A hole was drilled in 1971 to test an EM conductor west of Elbow Lake (A.F. 91953).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 85-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by basalt, basaltic andesite and medium- to coarse-grained, equigranular gabbro and melagabbro (unit J1a). A multiphase diabase dyke complex including diabasic pegmatite, and containing screens of pillowed basalt (unit P2f) is exposed in the south. Diabase, andesite, rhyolite, fine-grained leucotonalite, plagioclase-amphibole porphyry, plagioclase porphyry, quartz-feldspar porphyry, and screens of pillowed basalt (unit J13d) occur to the north of the occurrence, and form part of the Webb Island basalt and the Tee Lake dyke complex (Syme and Whalen, 1992). A series of NNE-trending faults offset the sequence to the east and NW of the occurrence.

Hole UP-1 intersected a predominantly felsic volcanic sequence consisting of "agglomerate" , "rhyolite", "rhyolitic tuff", and minor "andesite" (A.F. 91953).

MINERALIZATION

Two intervals containing "nearly solid pyrrhotite" were intersected by hole UP-1, from 37.9-38.3 m (124.5-125.6 ft.) and 41.3-44.9 m (135.5-147.2 ft.) (A.F. 91953). Minor disseminated chalcopyrite is present in the pyrrhotite.

GEOCHEMICAL DATA

No assay results were reported.

CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation.

REFERENCES

A.F. 91953 and 91954; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Syme, E.C. and Whalen, J.B.

1992: Geology, Elbow Lake, Manitoba; Geological Survey of Canada, Preliminary 1:20 000 map, Shield-Margin Project, File ELBOW92.PS.

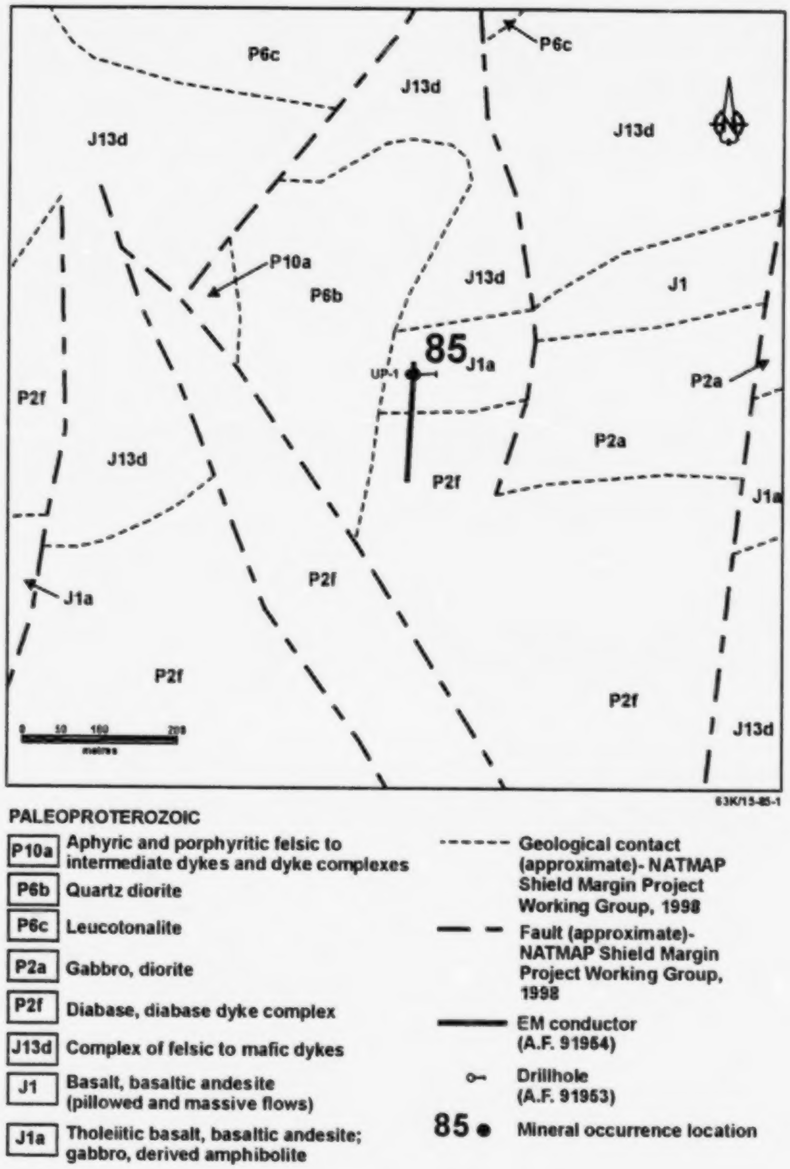

P6c
P6c
J13d
J13d
J13d
P10a
P6b
J13d
J1
85
J1a
UP-1
P2a
P2f
P2a
J13d
P2f
J1a
P2f
J1a
P2f
P2f
J13d
0 50 100 200
metres
63K/13-85-1
PALEOPROTEROZOIC
P10a Aphyric and porphyritic felsic to intermediate dykes and dyke complexes
P6b Quartz diorite
P6c Leucotonalite
P2a Gabbro, diorite
P2f Diabase, diabase dyke complex
J13d Complex of felsic to mafic dykes
J1 Basalt, basaltic andesite (pillowed and massive flows)
J1a Tholeiitic basalt, basaltic andesite; gabbro, derived amphibolite
Geological contact (approximate)- NATMAP Shield Margin Project Working Group, 1998
Fault (approximate)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 91954)
Drillhole (A.F. 91953)
85 ● Mineral occurrence location

Figure 85-1: Geological setting of occurrence 85.

LOCATION: 86

NAME: Boom showing
UTM: 375670E, 6088315N
AREA: approximately 500 m west of south end of Webb Lake
ACCESS: via bush aircraft, then traverse
AIRPHOTO: MB90025-196

EXPLORATION SUMMARY

In 1936 J. Macdougall staked a claim in the area. Some trenching appears to have been undertaken in the 1940's and 50's, but has not been recorded in the assessment files. In 1971 Noranda Exploration Company performed a ground HLEM (Ronka Mark III) and magnetic geophysical survey covering the north end of Elbow Lake (A.F. 92042). Some of the conductive responses were subsequently drilled by Manitoba Mineral Resources, Ltd., but no assessment work for the area covering the occurrence was filed. In 1973 Sherritt Gordon Mines carried out airborne EM and magnetic surveys under Airborne Permit No. 114 (A.F. 92020). In 1982-83 Granges Exploration Ltd. completed a geophysical survey over the area (A.F. 92997). Westfield Minerals Limited undertook a mapping and sampling programme in 1987 (A.F. 92997).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 86-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by the Echo Lake pluton, consisting of an intrusion breccia margin and plagioclase-phyric granodiorite (unit P2d) (Schledewitz, 1993a, b). To the SE the area is underlain by foliated, homogeneous, mafic flows with isolated pillows, and hornblende-plagioclase-phyric volcaniclastic rocks with abundant hornblende-plagioclase- and plagioclase-phyric intermediate dykes and sills (grouped under unit J13d).

The occurrence is located within an east-west trending shear cutting coarse-grained hornblende-quartz-feldspar "diorite" (A.F. 92997).

MINERALIZATION

Small lenses, pods and stringers of pyrite, pyrrhotite and minor chalcopyrite occur within the shear aligned parallel to the schistosity, and are associated with quartz and quartz-chlorite veinlets.

GEOCHEMICAL DATA

Five grab samples were collected from the Boom occurrence. Assays returned values ranging from 0.137-0.411 g Au/t (0.004-0.012 oz. Au/ton), and average 0.240 g Au/t (0.007 oz. Au/ton) (A.F. 92997).

CLASSIFICATION

Vein type deposit; multiple veins or lenses. Associated with shear zone cutting mafic intrusion.

REFERENCES

A.F. 92020, 92042 and 92997; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Schledewitz, D.C.P.

1993a: Geology of the Webb Lake-Fay Lake area (NTS 63K/14NE and 63K/15NW); in Manitoba Energy and Mines, Energy and Minerals Division, Report of Activities, 1993, pp. 29-32.

1993b: Webb Lake-Fay Lake (east half); Manitoba Energy and Mines, Energy and Minerals Division, Preliminary Map 1993-K4 (NTS 63K/15NW), 1:20 000.

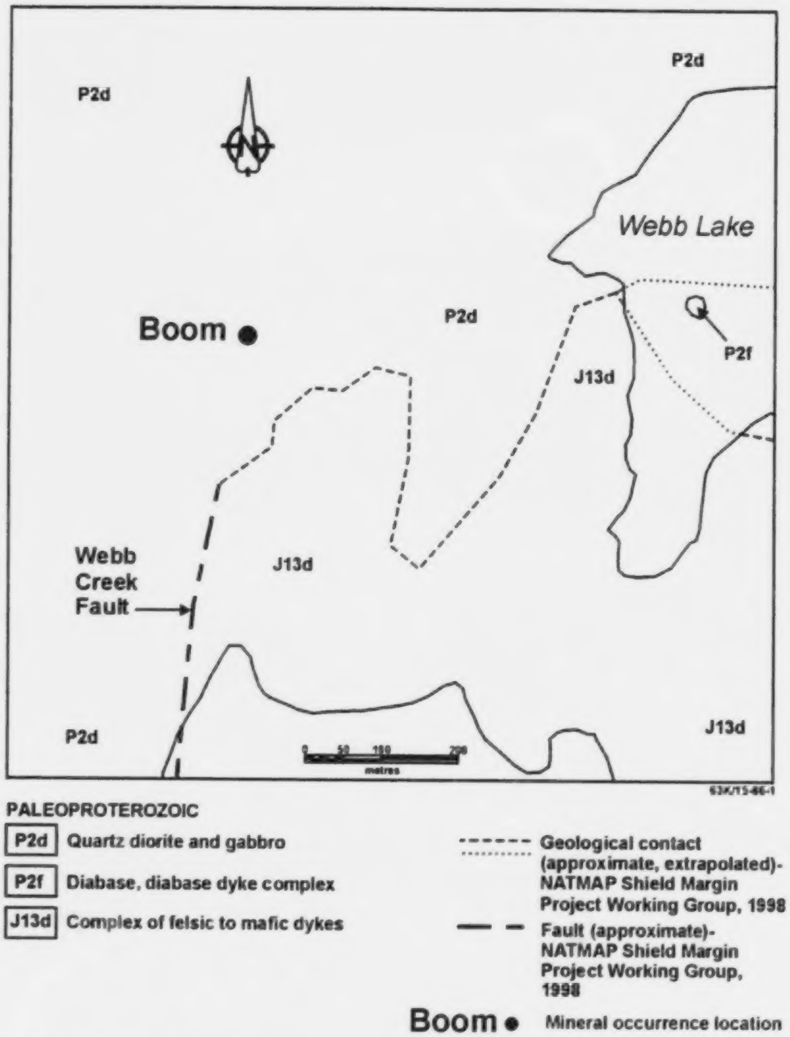

P2d
P2d
Webb Lake
Boom
P2d
P2f
J13d
Webb
Creek
Fault
J13d
P2d
0
50
100
200
metres
J13d
63K/15-86-1
PALEOPROTEROZOIC
P2d Quartz diorite and gabbro
P2f Diabase, diabase dyke complex
J13d Complex of felsic to mafic dykes
Geological contact (approximate, extrapolated)- NATMAP Shield Margin Project Working Group, 1998
Fault (approximate)- NATMAP Shield Margin Project Working Group, 1998
Boom ● Mineral occurrence location

Figure 86-1: General geology at occurrence 86 (Boom).

LOCATION: 87

NAME: mineralization intersected by diamond drilling
UTM: 377580E, 6077325N
AREA: under Elbow Lake, W of McDougalls Point
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage
AIRPHOTO: MB90025-136

EXPLORATION SUMMARY

In 1972-73 Manitoba Mineral Resources Ltd. performed an HLEM survey utilizing Geonics EM-17 and ABEM GUN equipment (A.F. 92149). Most of the conductors outlined by this survey were drill tested in 1974 (A.F. 92148, 92654).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 87-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by pillowed and massive aphyric flows of the McDougalls Point basalt (unit F1a). Dark pink to red, foliated, coarse-grained, equigranular to subporphyritic hornblende-biotite granodiorite (unit P7a) of the Big Rat Lake pluton occurs to the west.

Hole E-52 intersected a sequence consisting of massive to schistose mafic to felsic volcanic rocks (andesite, dacite and rhyolite) with several graphitic schist intervals (A.F. 92654).

MINERALIZATION

The following mineralized intervals were intersected by hole E-52 (A.F. 92654) (see table below).

Interval	Mineralization
49.7-77.7 m (163.0-254.8 ft.)	to 30% "brownish black, massive, aphanitic pyrite", to 20% thin pyrite stringers, in graphitic schist with minor rhyolitic intervals
78.9-79.9 m (258.8-262.0 ft.)	10% pyrite, as thin stringers, in finely banded graphitic schist

GEOCHEMICAL DATA

No assays were reported in the assessment files.

CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation. The presence of graphite suggests a biogenic contribution to the rocks associated with the mineralization.

REFERENCES

A.F. 91487, 92148, 92149 and 92654; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Energy and Minerals Division

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

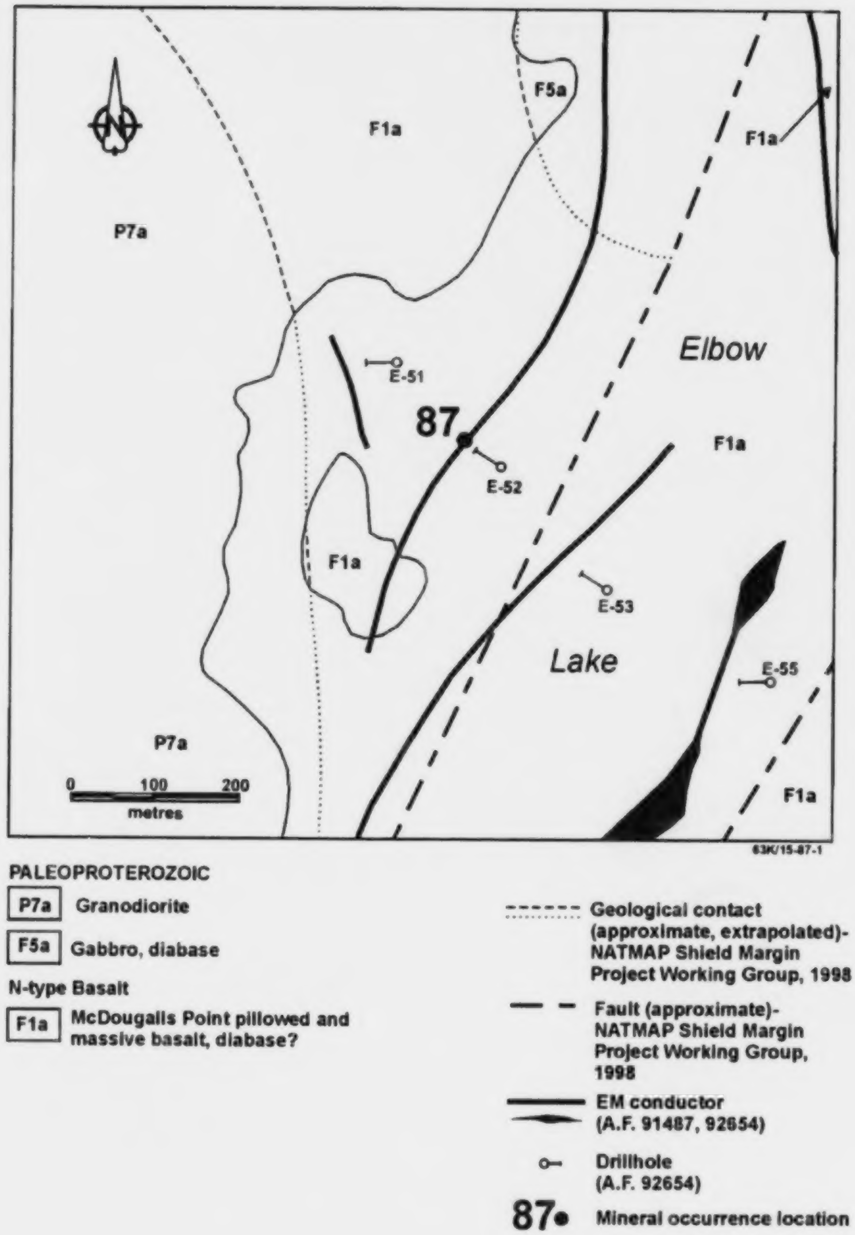

N
F5a
F1a
F1a
P7a
Elbow
E-51
87
E-52
F1a
F1a
E-53
Lake
E-55
P7a
0
100
200
metres
F1a
63K/15-87-1
PALEOPROTEROZOIC
P7a Granodiorite
F5a Gabbro, diabase
N-type Basalt
F1a McDougalls Point pillowed and massive basalt, diabase?
Geological contact (approximate, extrapolated)- NATMAP Shield Margin Project Working Group, 1998
Fault (approximate)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 91487, 92654)
Drillhole (A.F. 92654)
87 Mineral occurrence location

Figure 87-1: Geological setting of occurrence 87.

LOCATION: 88

NAME: mineralization intersected by diamond drilling
UTM: 380930E, 6082775N
AREA: under Moen Bay, Elbow Lake
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage
AIRPHOTO: MB90025-116

EXPLORATION SUMMARY

In 1971 Noranda Exploration Company performed a ground HLEM (Ronka Mark III) and magnetic geophysical survey covering the north end of Elbow Lake (A.F. 92042). Some of the conductive responses were subsequently drilled by Manitoba Mineral Resources, Ltd. (A.F. 91485, 92654).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 88-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by mafic and felsic phyllonites (unit W6c) of the Elbow Lake shear zone (Galley *et al.*, 1987, 1989; Syme, 1990, 1991, 1992), as well as a diabase dyke complex (unit P2f). In this area the shear zone is approximately 800 m thick (Syme and Whalen, 1992).

The sequence intersected by hole E-61A consists of light grey, fine-grained andesitic "tuff" (A.F. 92654), and is most likely part of the mafic phyllonite of the Elbow Lake shear zone.

MINERALIZATION

Hole E-61A intersected a conformable graphitic interval containing 10% finely layered pyrite over the interval 86.7-88.5 m (284.3-290.2 ft.) (A.F. 92654).

GEOCHEMICAL DATA

No assays were reported for the mineralized interval.

CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation. This deposit has been considerably modified by deformation along the Elbow Lake shear zone. The presence of graphite suggests a biogenic contribution.

REFERENCES

A.F. 91485, 92042 and 92654; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

Galley, A.G., Ames, D.E. and Franklin, J.M.

1987: Geological setting of gold mineralization in the Elbow Lake region, Manitoba; in Manitoba Energy and Mines, Minerals Division, Report of Field Activities, 1987, pp.175-177.

1989: Results of studies on the gold metallogeny of the Flin Flon belt; in Investigations by the Geological Survey of Canada in Manitoba and Saskatchewan during the 1984-1989 Mineral Development Agreements, Geological Survey of Canada, Open File 2133, pp.25-32.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Syme, E.C.

1990: Elbow Lake project (part of NTS 63K/15W); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1990, pp.49-57.

1991: Elbow Lake project - Part A: supracrustal rocks and structural setting; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1991, pp.14-27.

1992: Elbow Lake Project - Part A: Supracrustal rocks; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1992, pp.32-46.

Syme, E.C. and Whalen, J.B.

1992: Geology, Elbow Lake, Manitoba; Geological Survey of Canada, Preliminary 1:20 000 map, Shield-Margin Project, File ELBOW92.PS.

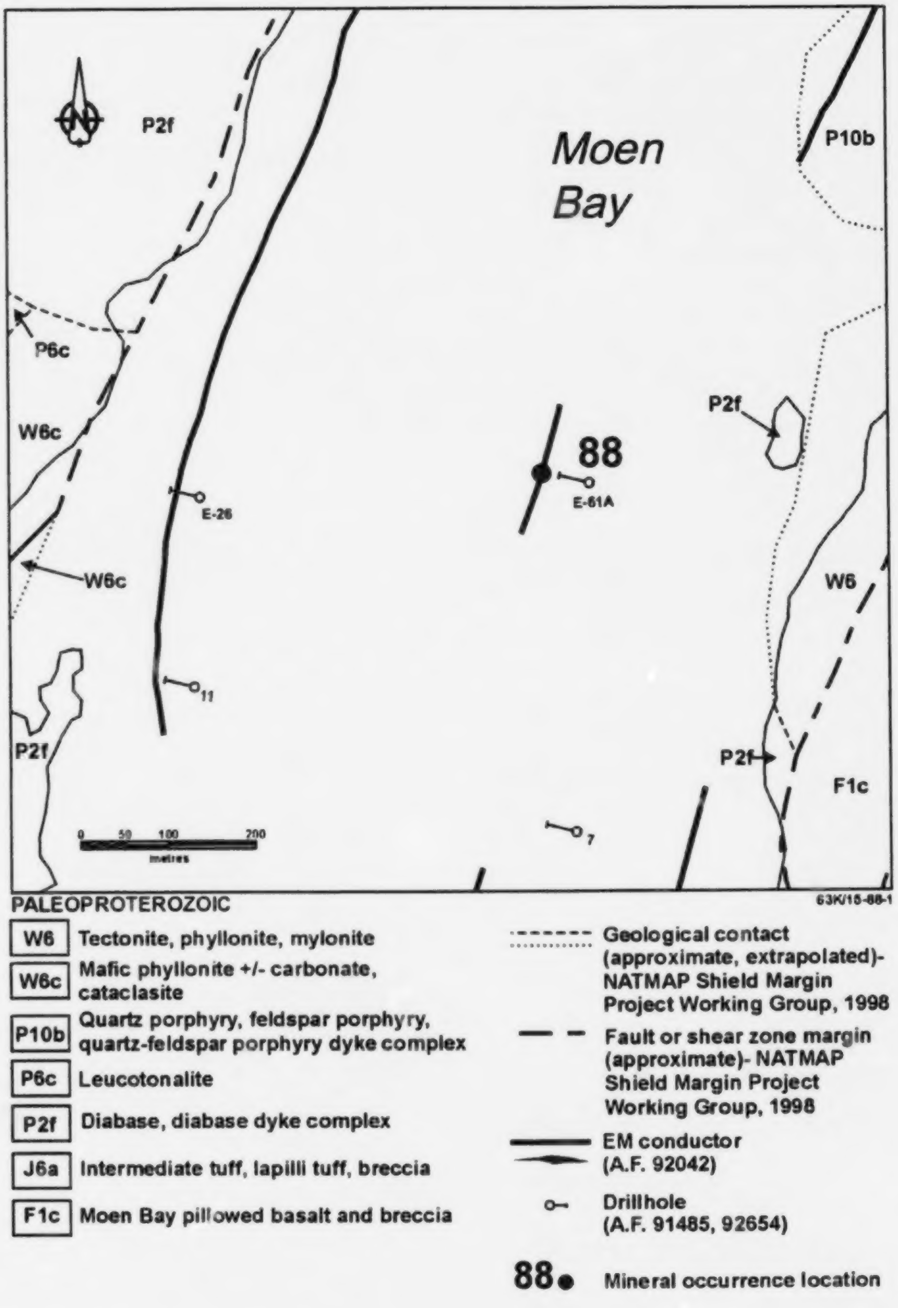

N
P2f
Moen
Bay
P10b
P6c
W6c
P2f
88
E-61A
E-26
W6c
W6
11
P2f
P2f
F1c
7
0 50 100 200
metres
PALEOPROTEROZOIC
63K/16-88-1
W6 Tectonite, phyllonite, mylonite
W6c Mafic phyllonite +/- carbonate, cataclasite
P10b Quartz porphyry, feldspar porphyry, quartz-feldspar porphyry dyke complex
P6c Leucotonalite
P2f Diabase, diabase dyke complex
J6a Intermediate tuff, lapilli tuff, breccia
F1c Moen Bay pillowed basalt and breccia
Geological contact (approximate, extrapolated)- NATMAP Shield Margin Project Working Group, 1998
Fault or shear zone margin (approximate)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 92042)
Drillhole (A.F. 91485, 92654)
88 Mineral occurrence location

Figure 88-1: Geological setting of occurrence 88.

LOCATION: 89

NAME: Cabin
UTM: 376725E, 6088495N
AREA: east shore of south bay of Webb Lake
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage
AIRPHOTO: MB90025-144

EXPLORATION SUMMARY

In 1936 J. Macdougall staked a claim in the area. In 1971 Noranda Exploration Company performed a ground HLEM (Ronka Mark III) and magnetic geophysical survey covering the north end of Elbow Lake (A.F. 92042). Some of the conductive responses were subsequently drilled by Manitoba Mineral Resources, Ltd., but no assessment work for the area covering the occurrence was filed. In 1973 Sherritt Gordon Mines carried out airborne EM and magnetic surveys under Airborne Permit No. 114 (A.F. 92020). In 1982-83 Granges Exploration Ltd. completed a geophysical survey over the area (A.F. 92997). Westfield Minerals Limited undertook a mapping and sampling programme in 1987 (A.F. 92997).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 89 -1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by hornblende-plagioclase-phyric volcaniclastic rocks with abundant hornblende-plagioclase- and plagioclase-phyric intermediate dykes and sills, and quartz-phyric rhyodacite (Schledewitz, 1993a, b) (grouped under units J6b and P2f). To the SE of this assemblage, the sequence consists of basalt, basaltic andesite and thin, amygdaloidal, pillowed flows with pillow breccia and hyaloclastite (unit J1d).

The occurrence is located within sheared, altered, mafic volcanic flows.

MINERALIZATION

Sheared and altered mafic volcanic rocks contain pods and stringers of pyrite and pyrrhotite, and quartz veinlets and stringers.

GEOCHEMICAL DATA

Six samples, including 4 chip samples, were collected from the occurrence (A.F. 92997). Assays returned values ranging from 0.068-0.137 g Au/t (0.002-0.004 oz. Au/ton).

CLASSIFICATION

Vein type deposit; multiple veins or lenses. Deposit has been modified by a shear zone.

REFERENCES

A.F. 92020, 92042 and 92997; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

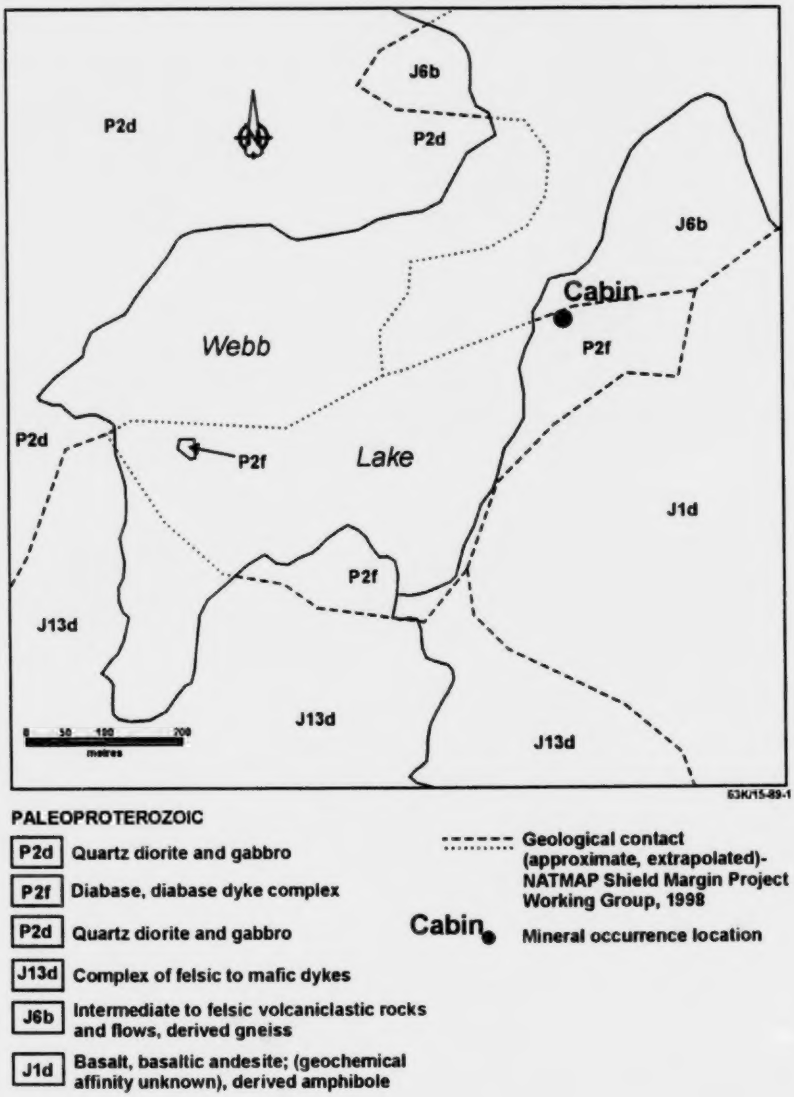
NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Schledewitz, D.C.P.

1993a: Geology of the Webb Lake-Fay Lake area (NTS 63K/14NE and 63K/15NW); in Manitoba Energy and Mines, Energy and Minerals Division, Report of Activities, 1993, pp. 29-32.

1993b: Webb Lake-Fay Lake (east half); Manitoba Energy and Mines, Energy and Minerals Division, Preliminary Map 1993-K4 (NTS 63K/15NW), 1:20 000.



J6b
P2d
P2d
J6b
Cabin
Webb
P2f
P2d
P2f
Lake
J1d
P2f
J13d
J13d
J13d
0 50 100 200
metres
63K/15-89-1
PALEOPROTEROZOIC
P2d Quartz diorite and gabbro
P2f Diabase, diabase dyke complex
P2d Quartz diorite and gabbro
J13d Complex of felsic to mafic dykes
J6b Intermediate to felsic volcaniclastic rocks and flows, derived gneiss
J1d Basalt, basaltic andesite; (geochemical affinity unknown), derived amphibole
Geological contact (approximate, extrapolated)- NATMAP Shield Margin Project Working Group, 1998
Cabin Mineral occurrence location

Figure 89-1: General geology at occurrence 89 (Cabin).

LOCATION: 90

NAME: mineralization intersected by diamond drilling
UTM: 380750E, 6081955N
AREA: under Elbow Lake approximately 500 m NNW of Gold Dust Island
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage
AIRPHOTO: MB90025-55

EXPLORATION SUMMARY

In 1971 Noranda Exploration Company performed a ground HLEM (Ronka Mark III) and magnetic geophysical survey covering the north end of Elbow Lake (A.F. 92042). Some of the conductive responses were subsequently drilled by Manitoba Mineral Resources, Ltd. (A.F. 91487, 92654).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 90-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by mafic and felsic phyllonites (unit W6c) of the Elbow Lake shear zone (Galley *et al.*, 1987, 1989; Syme, 1990, 1991, 1992). In this area the shear zone is approximately 1100 m thick (Syme and Whalen, 1992).

The litholog for hole E-27 indicates it intersected a sequence of intermediate "bedded tuffs" with minor massive rhyolite (A.F. 92654). The "tuffs" are most likely phyllonites of the Elbow Lake shear zone.

MINERALIZATION

Two intervals containing up to 90% pyrite with minor graphite were intersected between 55.4-56.2 m (181.9-184.5 ft.) and 60.8-62.6 m (199.4-205.4 ft.) in hole E-27 (A.F. 92654).

GEOCHEMICAL DATA

One sample collected between 60.5-62.6 m (198.4-205.4 ft.) was assayed and returned 0.07% Cu and 0.02% Zn (A.F. 92654).

CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation. This deposit has been considerably modified by deformation along the Elbow Lake shear zone.

REFERENCES

A.F. 91487, 92042 and 92654; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Energy and Minerals Division

Galley, A.G., Ames, D.E. and Franklin, J.M.

1987: Geological setting of gold mineralization in the Elbow Lake region, Manitoba; in Manitoba Energy and Mines, Minerals Division, Report of Field Activities, 1987, pp.175-177.

1989: Results of studies on the gold metallogeny of the Flin Flon belt; in Investigations by the Geological Survey of Canada in Manitoba and Saskatchewan during the 1984-1989 Mineral Development Agreements, Geological Survey of Canada, Open File 2133, pp.25-32.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Syme, E.C.

1990: Elbow Lake project (part of NTS 63K/15W); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1990, pp.49-57.

1991: Elbow Lake project - Part A: supracrustal rocks and structural setting; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1991, pp.14-27.

1992: Elbow Lake Project - Part A: Supracrustal rocks; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1992, pp.32-46.

Syme, E.C. and Whalen, J.B.

1992: Geology, Elbow Lake, Manitoba; Geological Survey of Canada, Preliminary 1:20 000 map, Shield-Margin Project, File ELBOW92.PS.

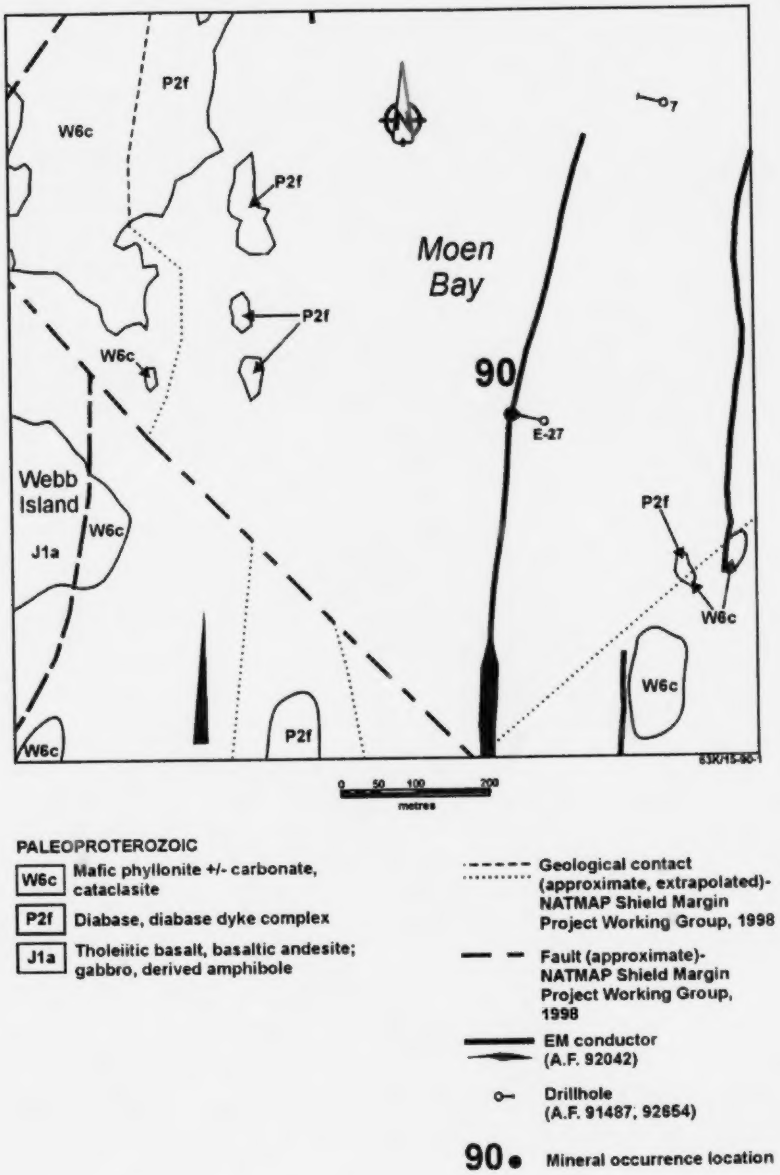

P2f
W6c
P2f
Moen
Bay
P2f
W6c
90
E-27
7
Webb
Island
W6c
J1a
P2f
W6c
W6c
P2f
W6c
63K/15-90-1
0
50
100
200
metres
PALEOPROTEROZOIC
W6c
Mafic phyllonite +/- carbonate, cataclasite
P2f
Diabase, diabase dyke complex
J1a
Tholeiitic basalt, basaltic andesite; gabbro, derived amphibole
Geological contact (approximate, extrapolated)- NATMAP Shield Margin Project Working Group, 1998
Fault (approximate)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 92042)
Drillhole (A.F. 91487, 92654)
90
Mineral occurrence location

Figure 90-1: Geological setting of occurrence 90.

LOCATION: 91

NAME: mineralization intersected by diamond drilling
UTM: 381470E, 6080325N
AREA: under Elbow Lake approximately 300 m ESE of Gold Dust Island
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage
AIRPHOTO: MB90025-53

EXPLORATION SUMMARY

Manitoba Mineral Resources Ltd. drilled an EM (ABEM GUN) conductor at the occurrence in 1974 (A.F. 90501, 92654).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 91-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by mafic and felsic phyllonites (unit W6c) of the Elbow Lake-Claw Bay shear zones (Galley *et al.*, 1987, 1989; Syme, 1990, 1991, 1992). In this area the aggregate thickness of the shear zone is approximately 3200 m (Syme and Whalen, 1992).

The litholog for hole E-73 indicates the sequence at the occurrence consists of mafic to intermediate "tuff" interlayered with amygdaloidal "andesite" and finely bedded "siltstone" (A.F. 92654). In light of the location of the occurrence within a major shear zone, this sequence probably represents a phyllonite rather than a volcaniclastic or sedimentary rock.

MINERALIZATION

Hole E-73 intersected several sulphide-rich intervals, some containing black "pyrite", as follows (A.F. 92654) (see table below).

56.4-57.5 m (185.0-188.5 ft.)	20% pyrite as bands parallel to foliation
60.8-63.9 m (199.6-209.5 ft.)	20% crystallized pyrite with black, aphanitic pyrite, 10% graphite
64.2-64.5 m (210.7-211.7 ft.)	20% crystallized pyrite with black, aphanitic pyrite, 10% graphite
64.9-78.2 m (213.0-256.6 ft.)	to 20% finely crystallized pyrite, mostly black pyrite, to 10% graphite
81.4-107.9 m (267.0-354.0 ft.)	10-20% crystallized pyrite, some pyrrhotite as bands parallel to foliation, trace chalcopyrite

GEOCHEMICAL DATA

The following assays were obtained from the mineralized interval (A.F. 92654):

Interval	%Cu	Au
62.3-63.9 m (204.5-209.5 ft.)	0.02	nil
64.2-64.5 m (210.7-211.6 ft.)	0.06	tr
64.9-66.7 m (213.0-218.9 ft.)	0.04	0.68 g/t (0.02 oz./ton)
68.0-69.4 m (223.0-227.7 ft.)	0.03	0.34 g/t (0.01 oz. Au/ton)
69.4-70.7 m (227.7-232.0 ft.)	0.04	tr
75.7-77.1 m (248.2-253.1 ft.)	0.03	0.34 g/t (0.01 oz. Au/ton)
81.4-82.9 m (267.0-272.0 ft.)	0.03	tr
82.9-83.5 m (272.0-273.9 ft.)	0.07	tr
87.7-88.6 m (287.7-290.6 ft.)	0.04	tr
89.1-89.4 m (292.3-293.2 ft.)	0.07	tr
96.9-98.4 m (317.9-322.9 ft.)	0.08	tr
98.4-98.6 m (322.9-323.6 ft.)	0.08	tr

CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation. This deposit has been considerably modified by deformation along the Elbow Lake shear zone.

REFERENCES

A.F. 90501 and 92654; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

Galley, A.G., Ames, D.E. and Franklin, J.M.

1987: Geological setting of gold mineralization in the Elbow Lake region, Manitoba; in Manitoba Energy and Mines, Minerals Division, Report of Field Activities, 1987, pp.175-177.

1989: Results of studies on the gold metallogeny of the Flin Flon belt; in Investigations by the Geological Survey of Canada in Manitoba and Saskatchewan during the 1984-1989 Mineral Development Agreements, Geological Survey of Canada, Open File 2133, pp.25-32.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

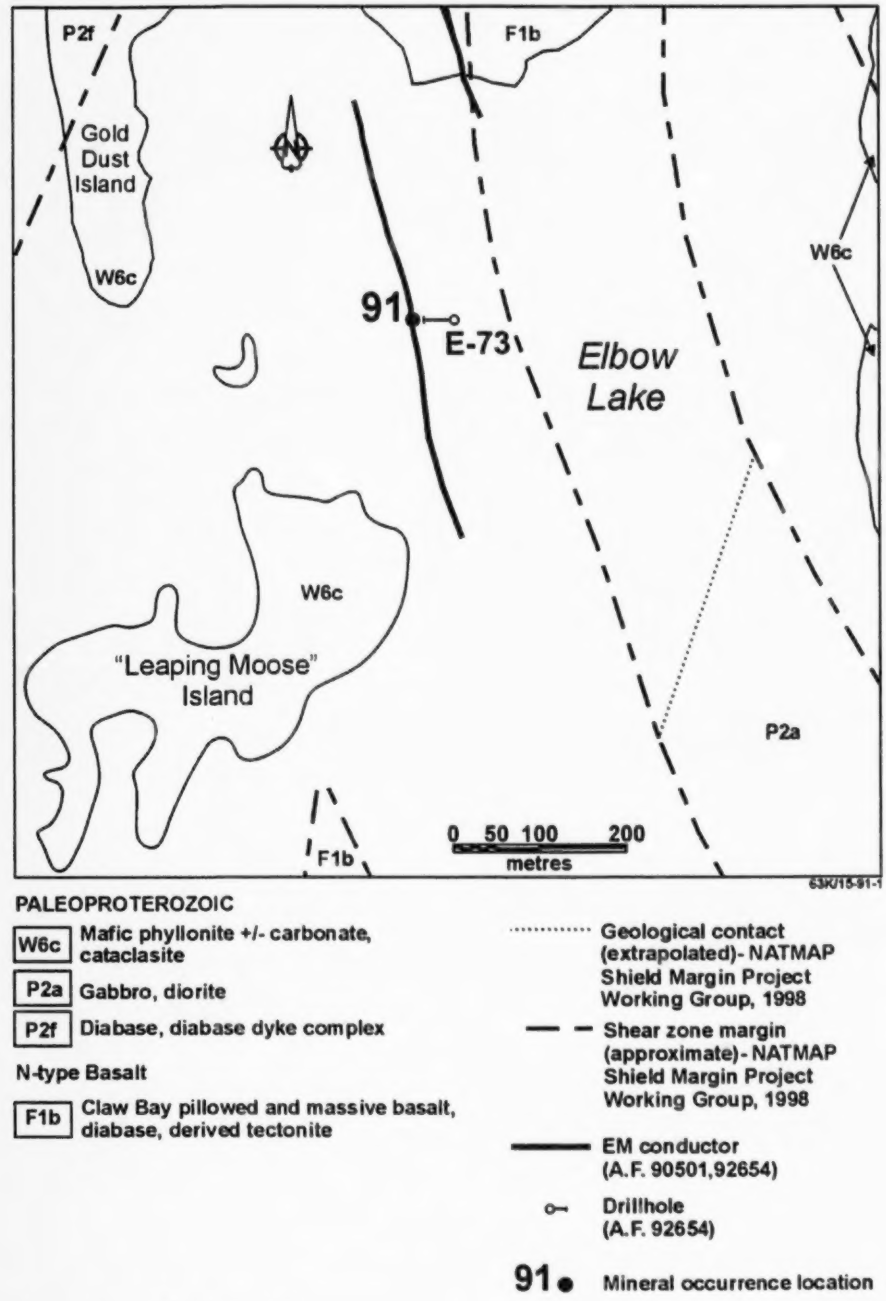

P2f
F1b
Gold Dust Island
W6c
91
E-73
Elbow Lake
W6c
W6c
"Leaping Moose" Island
P2a
F1b
0 50 100 200
metres
63K/15-91-1
PALEOPROTEROZOIC
W6c Mafic phyllonite +/- carbonate, cataclasite
P2a Gabbro, diorite
P2f Diabase, diabase dyke complex
N-type Basalt
F1b Claw Bay pillowed and massive basalt, diabase, derived tectonite
Geological contact (extrapolated)- NATMAP Shield Margin Project Working Group, 1998
Shear zone margin (approximate)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 90501,92654)
Drillhole (A.F. 92654)
91 Mineral occurrence location

Figure 91-1: Geological setting of occurrence 91.

Syme, E.C.

1990: Elbow Lake project (part of NTS 63K/15W); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1990, pp.49-57.

1991: Elbow Lake project - Part A: supracrustal rocks and structural setting; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1991, pp.14-27.

1992: Elbow Lake Project - Part A: Supracrustal rocks; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1992, pp.32-46.

Syme, E.C. and Whalen, J.B.

1992: Geology, Elbow Lake, Manitoba; Geological Survey of Canada, Preliminary 1:20 000 map, Shield-Margin Project, File ELBOW92.PS.

LOCATION: 92

NAME: mineralization intersected by diamond drilling
UTM: 384920E, 6090095N
AREA: approximately 900 m SSE of Muhekun Lake
ACCESS: via bush aircraft to Hasett Lake (informal name) south of Muhekun Lake, then traverse
AIRPHOTO: MB90025-57

EXPLORATION SUMMARY

In 1981 Gr„nges Exploration AB drilled several geophysical (EM?) anomalies in the Elbow Lake area (A.F. 93052).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 92-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by dark green, aphyric, pillowed, mafic flows (Schledewitz, 1993a, b), part of a sequence that is dominated by felsic to intermediate volcanic and intrusive rocks (unit J13d). Mafic gneiss (unit U1b) and the Gauthier Lake pluton, consisting of medium- to coarse-grained, equigranular, biotite±hornblende granodiorite (unit P7b) occurs to the west. A sequence of hornblende-plagioclase-phyric volcanic rocks with abundant hornblende-plagioclase and plagioclase-phyric intermediate dykes and sills (unit J1d) is exposed to the east.

Hole HAS-3 intersected a sequence of light to medium grey, intermediate to felsic "tuffs" (A.F. 93052). It is unclear if the tuffaceous character is a primary feature or a result of post depositional deformation.

MINERALIZATION

A sulphide-rich interval was intersected in hole HAS-3 between 19.6-21.0 m (64.4-69.0 ft.) (A.F. 93052). Bands and lenses of sulphides, cosisting of 10-40% pyrite with minor chalcopyrite, occur within slightly altered "felsic tuff".

GEOCHEMICAL DATA

The following assays were obtained from mineralized intervals (A.F. 93052) (see table below).

Hole No.	Interval	%Cu	%Zn	Au	Ag
HAS-3	14.3-15.8 m (47.0-52.0 ft.)	0.03	0.01	1.71 g/t (0.05 oz./ton)	17.12 g/t (0.5 oz./ton)
	18.3-19.2 m (60.0-63.0 ft.)	0.01	0.02	1.71 g/t (0.05 oz./ton)	17.12 g/t (0.5 oz./ton)
	19.2-19.6 m (63.0-64.4 ft.)	0.07	0.04	1.71 g/t (0.05 oz./ton)	17.12 g/t (0.5 oz./ton)
	19.6-20.1 m (64.4-66.0 ft.)	0.06	0.01	1.71 g/t (0.05 oz./ton)	17.12 g/t (0.5 oz./ton)
	20.1-21.0 m (66.0-69.0 ft.)	0.17	0.13	1.71 g/t (0.05 oz./ton)	17.12 g/t (0.5 oz./ton)
	21.0-21.6 m (69.0-71.0 ft.)	0.01	0.05	1.71 g/t (0.05 oz./ton)	17.12 g/t (0.5 oz./ton)

CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation.

REFERENCES

A.F. 93052; Cancelled Assessment File, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Schledewitz, D.C.P.

1993a: Geology of the Webb Lake-Fay Lake area (NTS 63K/14NE and 63K/15NW); in Manitoba Energy and Mines, Energy and Minerals Division, Report of Activities, 1993, pp. 29-32.

1993b: Webb Lake-Fay Lake (east half); Manitoba Energy and Mines, Energy and Minerals Division, Preliminary Map 1993-K4 (NTS 63K/15NW), 1:20 000.

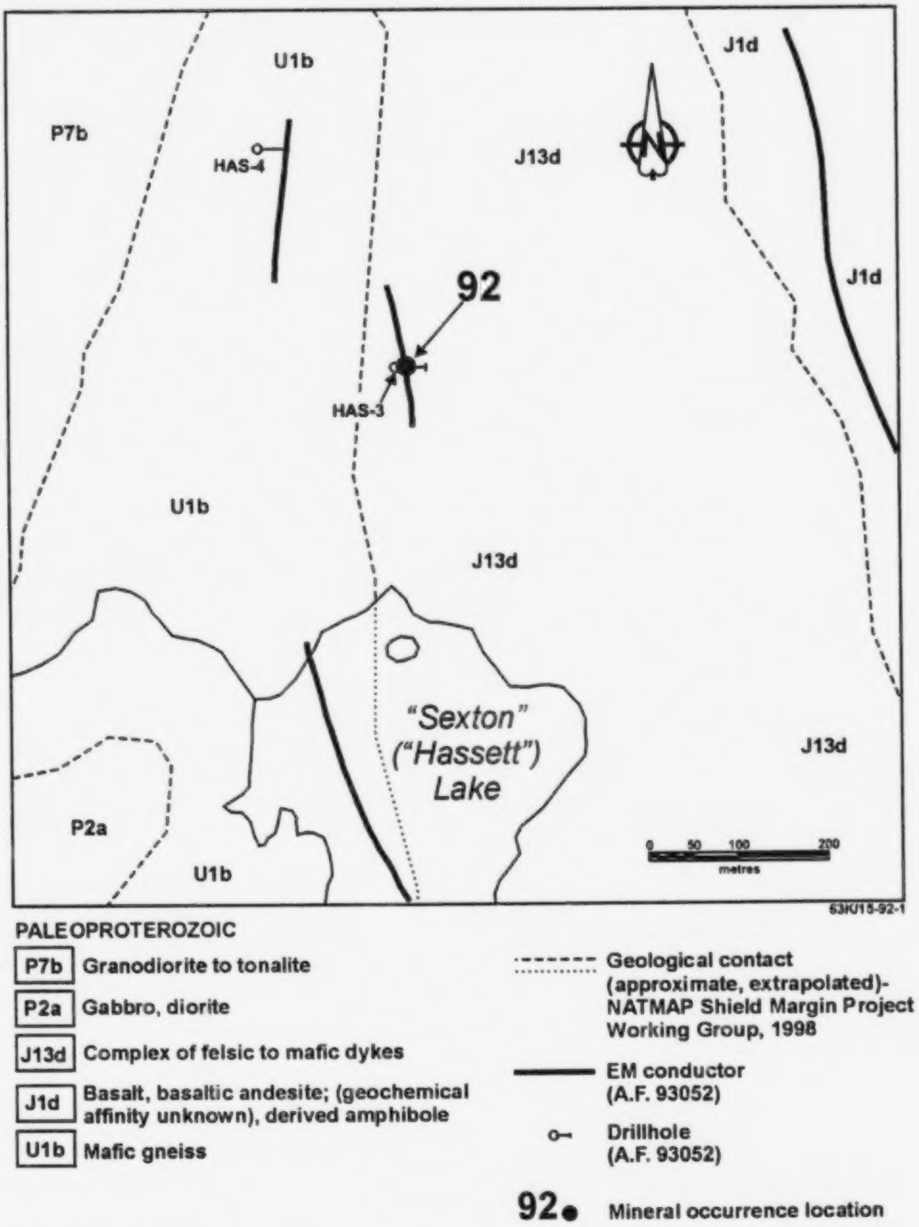

U1b
P7b
HAS-4
J13d
J1d
J1d
92
HAS-3
U1b
J13d
"Sexton" ("Hassett") Lake
J13d
P2a
U1b
0 50 100 200
metres
63K/15-92-1
PALEOPROTEROZOIC
P7b Granodiorite to tonalite
P2a Gabbro, diorite
J13d Complex of felsic to mafic dykes
J1d Basalt, basaltic andesite; (geochemical affinity unknown), derived amphibole
U1b Mafic gneiss
Geological contact (approximate, extrapolated)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 93052)
Drillhole (A.F. 93052)
92● Mineral occurrence location

Figure 92-1: Geological setting of occurrence 92.

LOCATION: 93

NAME: mineralization intersected by diamond drilling
UTM: 376980E, 6080655N
AREA: under Elbow Lake, near north end of Long Bay
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage
AIRPHOTO: MB90025-138

EXPLORATION SUMMARY

In 1971 Noranda Exploration Company, Ltd. performed HLEM (Ronka Mk. III) surveys in the area. Some of the conductive responses were subsequently drilled by Manitoba Mineral Resources, Ltd. (A.F. 91487, 92654).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 93-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by pillowed and massive, aphyric McDougalls Point basalt (unit F1a). Fine to medium-grained, equigranular gabbro (unit P2a) is exposed to the east, and Long Bay basaltic conglomerate (unit F3c) occurs along the WNW side of Long Bay.

The sequence intersected by hole E-29 consists of interlayered mafic and felsic volcanic units with common graphitic±pyritic intervals (A.F. 92654). The sulphide-rich intervals are generally closely associated with felsic volcanic units.

MINERALIZATION

The following mineralized intervals were intersected by hole E-29 (A.F. 92654) (see table below).

42.5-51.1 m (139.5-167.5 ft.)	20% pyrite as blebs and stringers, 75% graphite
52.1-53.6 m (171.0-176.0 ft.)	20% pyrite as blebs and stringers, 75% graphite
58.6-63.1 m (192.1-207.0 ft.)	10% pyrite as blebs and stringers, 85% graphite
97.8-101.7 m (321.0-333.5 ft.)	10% pyrite as blebs and stringers, 85% graphite
102.0-107.5 m (334.7-352.7 ft.)	10-75% pyrite as blebs and stringers, 20-85% graphite
108.5-116.1 m (356.0-381.0 ft.)	10% pyrite as distinct bands and fracture fillings, 25% graphite

GEOCHEMICAL DATA

Samples collected from the sulphide-rich intervals returned low assay values: tr-0.04% Cu, nil-0.02% Zn, and tr-0.34 g Au/t.

CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation. The presence of considerable graphite suggests a biogenic contribution.

REFERENCES

A.F. 91487 and 92654; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group
1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

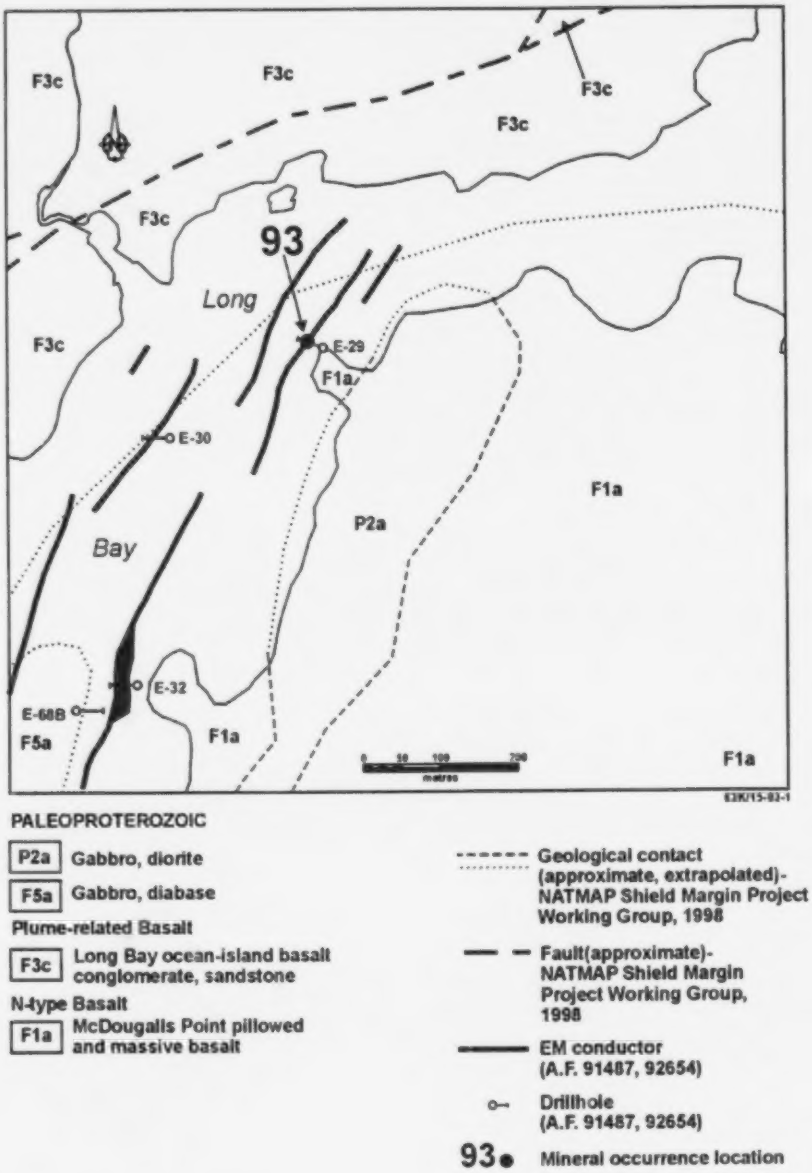

F3c
F3c
F3c
F3c
F3c
93
Long
F3c
E-29
F1a
E-30
F1a
P2a
Bay
E-32
E-68B
F5a
F1a
F1a
0
50
100
200
metres
63K/15-93-1
PALEOPROTEROZOIC
P2a Gabbro, diorite
F5a Gabbro, diabase
Plume-related Basalt
F3c Long Bay ocean-island basalt conglomerate, sandstone
N-type Basalt
F1a McDougalls Point pillowed and massive basalt
Geological contact (approximate, extrapolated)- NATMAP Shield Margin Project Working Group, 1998
Fault(approximate)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 91487, 92654)
Drillhole (A.F. 91487, 92654)
93 Mineral occurrence location

Figure 93-1: Geological setting of occurrence 93.

LOCATION: 94

NAME: mineralization intersected by diamond drilling
UTM: 376780E, 6080535N
AREA: under Elbow Lake, near north end of Long Bay
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage
AIRPHOTO: MB90025-138

EXPLORATION SUMMARY

In 1971 Noranda Exploration Company, Ltd. performed HLEM (Ronka Mk. III) surveys in the area. Some of the conductive responses were subsequently drilled by Manitoba Mineral Resources, Ltd. (A.F. 91487, 92654).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 94-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). Pillowed, massive, aphyric McDougalls Point basalt (unit F1a) occurs along the ESE side of Long Bay. Fine- to medium-grained, equigranular gabbro (unit P2a) intrudes the basalt to the east, and Long Bay basaltic conglomerate (unit F3c) occurs along the WNW side of the bay.

The sequence intersected by hole E-30 consists of interlayered, finely laminated "tuff" and rhyolite with minor feldspar porphyry and mafic volcanic units (A.F. 92654). The laminations in the "tuff" are often contorted. It is unclear if the bedded character of the "tuff" is a primary depositional feature or the result of subsequent tectonic influences.

MINERALIZATION

Hole E-30 intersected the following sulphide-rich intervals (A.F. 92654):

48.2-48.3 m (158.3-158.6 ft.)	95% pyrite; graphitic interval occurs above this
57.5-57.7 m (188.5-189.2 ft.)	75% pyrite

GEOCHEMICAL DATA

One sample was assayed, but it contained low metal values: 0.02% Cu, tr Zn and Au.

CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation. The presence of graphite suggests a biogenic contribution.

REFERENCES

A.F. 90500, 91487 and 92654; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

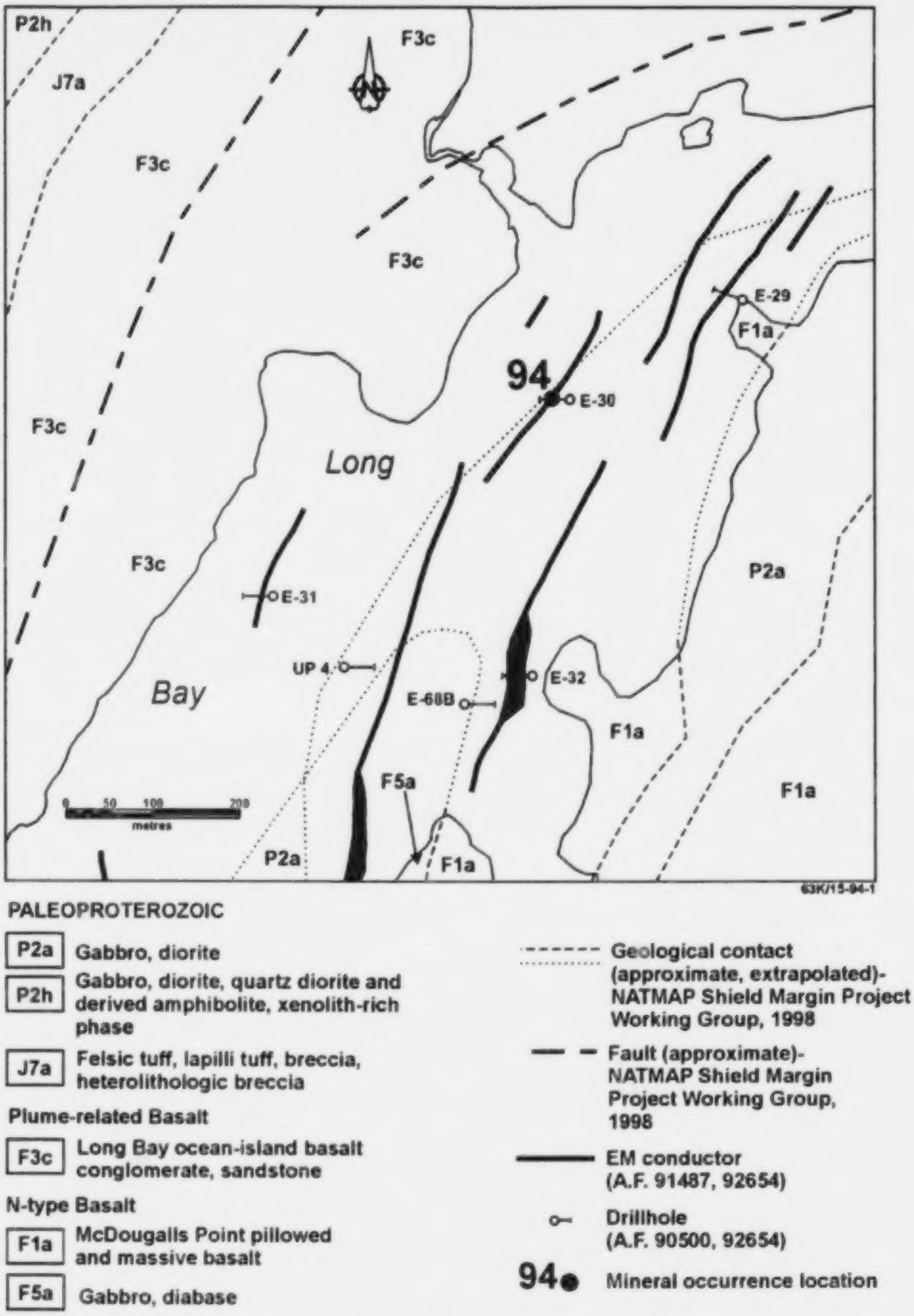

P2h
J7a
F3c
F3c
F3c
F3c
F3c
F3c
Long
Bay
94
E-30
E-29
F1a
E-31
UP 4
E-68B
E-32
P2a
F1a
F1a
F5a
P2a
F1a
0 50 100 200
metres
63K/15-94-1
PALEOPROTEROZOIC
P2a Gabbro, diorite
P2h Gabbro, diorite, quartz diorite and derived amphibolite, xenolith-rich phase
J7a Felsic tuff, lapilli tuff, breccia, heterolithologic breccia
Plume-related Basalt
F3c Long Bay ocean-island basalt conglomerate, sandstone
N-type Basalt
F1a McDougalls Point pillowed and massive basalt
F5a Gabbro, diabase
Geological contact (approximate, extrapolated)- NATMAP Shield Margin Project Working Group, 1998
Fault (approximate)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 91487, 92654)
Drillhole (A.F. 90500, 92654)
94● Mineral occurrence location

Figure 94-1: Geological setting of occurrence 94.

LOCATION: 95

NAME: mineralization intersected by diamond drilling
UTM: 376450E, 6080335N
AREA: under west side of Long Bay, Elbow Lake
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage
AIRPHOTO: MB90025-138

EXPLORATION SUMMARY

In 1971 Noranda Exploration Company, Ltd. performed HLEM (Ronka Mk. III) surveys in the area. Some of the conductive responses were subsequently drilled by Manitoba Mineral Resources, Ltd. (A.F. 91487, 92654).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 95-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The Long Bay basaltic conglomerate (unit F3c) occurs along the WNW side of Long Bay. Outcrops along the ESE side of Long Bay expose pillowed and massive, aphyric McDougalls Point basalt (unit F1a). Fine- to medium-grained, equigranular gabbro (unit P2a) and diabase (unit F5a) intrude the basalt.

Hole E-31 intersected a sequence dominated by graphitic and pyritic metasedimentary units, with rhyolite and mafic volcanic and volcaniclastic rocks appearing in the bottom of the hole (A.F. 92654).

MINERALIZATION

Several pyritic intervals were intersected by hole E-31, as follows (A.F. 92654):

32.0-44.5 m (105.0-146.0 ft.)	15% euhedral disseminated pyrite, 80% graphite
44.5-45.7 m (146.0-150.0 ft.)	85% fine-grained, banded pyrite, 10% graphite
53.2-54.7 m (174.5-179.5 ft.)	10% finely disseminated pyrite

GEOCHEMICAL DATA

One assayed sample returned trace quantities of Cu, Zn and Au.

CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation. The presence of graphite suggests a biogenic contribution.

REFERENCES

A.F. 90500, 91487 and 92654; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

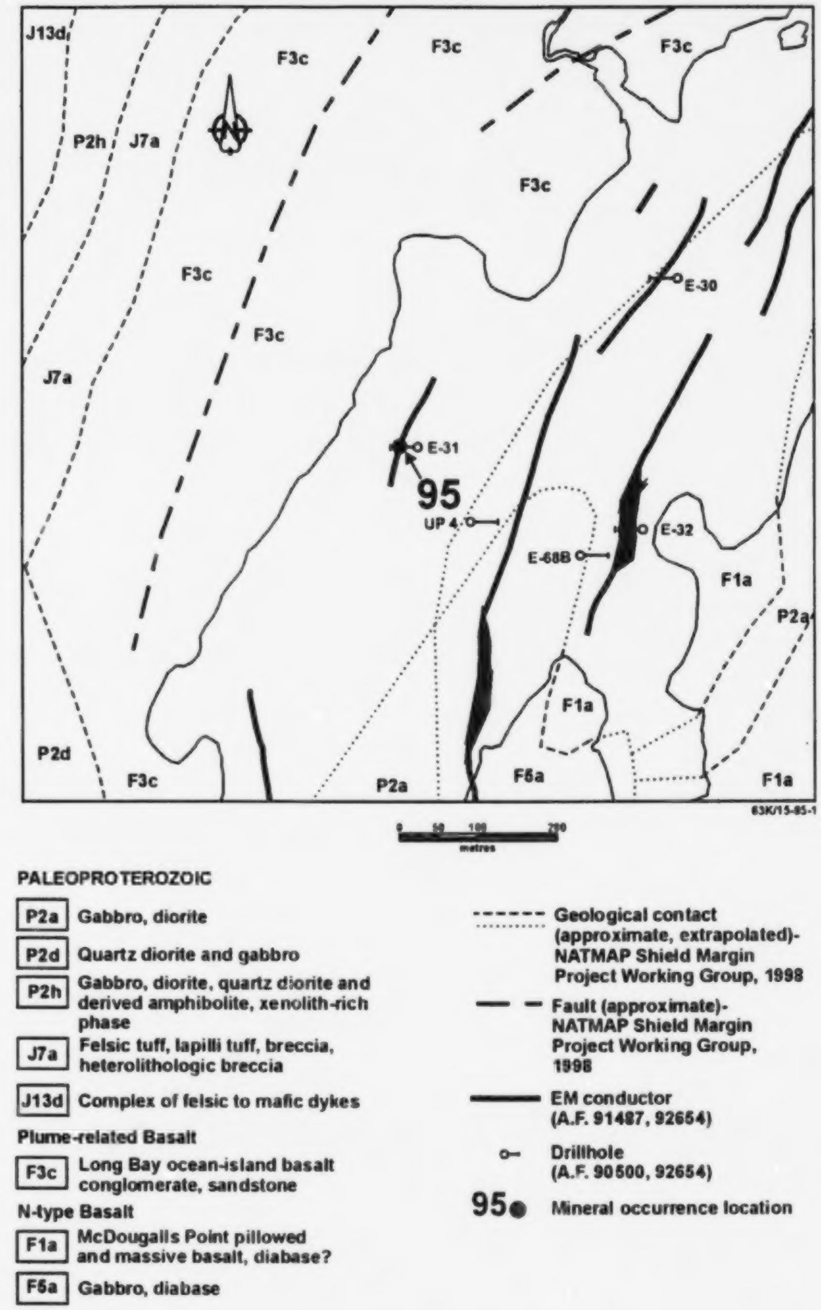

J13d
P2h
J7a
F3c
F3c
F3c
F3c
F3c
F3c
E-30
J7a
E-31
95
UP 4
E-32
E-68B
F1a
P2a
F1a
P2d
F3c
P2a
F5a
F1a
63K/15-95-1
0
50
100
200
metres
PALEOPROTEROZOIC
P2a Gabbro, diorite
P2d Quartz diorite and gabbro
P2h Gabbro, diorite, quartz diorite and derived amphibolite, xenolith-rich phase
J7a Felsic tuff, lapilli tuff, breccia, heterolithologic breccia
J13d Complex of felsic to mafic dykes
Plume-related Basalt
F3c Long Bay ocean-island basalt conglomerate, sandstone
N-type Basalt
F1a McDougalls Point pillowed and massive basalt, diabase?
F5a Gabbro, diabase
Geological contact (approximate, extrapolated)-NATMAP Shield Margin Project Working Group, 1998
Fault (approximate)-NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 91487, 92654)
Drillhole (A.F. 90500, 92654)
95● Mineral occurrence location

Figure 95-1: Geological setting of occurrence 95.

LOCATION: 96

NAME: mineralization intersected by diamond drilling
UTM: 376710E, 6080175N
AREA: under Long Bay, Elbow Lake
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage
AIRPHOTO: MB90025-138

EXPLORATION SUMMARY

In 1971 Noranda Exploration Company, Ltd. performed HLEM (Ronka Mk. III) surveys in the area. Some of the conductive responses were subsequently drilled by Manitoba Mineral Resources, Ltd. (A.F. 91485, 91487, 92654).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 96-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). Pillowed, massive, aphyric McDougalls Point basalt (unit F1a) is exposed in outcrop on the ESE side of Long Bay. Fine to medium-grained, equigranular diabase (unit F5a) and fine- to coarse-grained, equigranular gabbro and melagabbro (unit P2a) intrude the basalt to the south and east, and Long Bay basaltic conglomerate (unit F3c) occurs along the WNW side of the bay.

Hole E-32 intersected fine- to medium-grained mafic volcanic rock ("andesite"). Hole E-68B intersected a mafic volcanic ("andesite") interval with intercalated graphitic schist (A.F. 92654).

MINERALIZATION

"Andesite" in hole E-32 contains up to 7% pyrite as blebs along irregular fractures (A.F. 92654). Several graphitic schist intervals containing up to 30% pyrite were intersected by hole E-68B, as follows:

38.6-41.6 m (126.8-136.4 ft.)	10% pyrite veinlets in graphitic schist
50.6-72.5 m (166.0-237.8 ft.)	to 30% pyrite along schistosity in graphitic schist

GEOCHEMICAL DATA

The pyritic interval in hole E-32 returned only minor metal values: tr-0.02% Cu, tr Zn, and nil-tr Au. Assays from hole E-68B returned the following values (A.F. 92654) (see table below).

Hole No.	Interval	%Cu	g Au/t (oz. Au/ton)
E-68B	50.6-52.1 m (166.0-171.0 ft.)	0.02	2.40 (0.07)
	55.2-55.8 m (181.0-183.0 ft.)	0.03	0.34 (0.01)
	63.3-64.9 m (207.8-212.8 ft.)	0.03	0.34 (0.01)

CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation. The presence of graphite suggests a biogenic contribution.

REFERENCES

A.F. 90500, 91485, 91487 and 92654; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group
1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

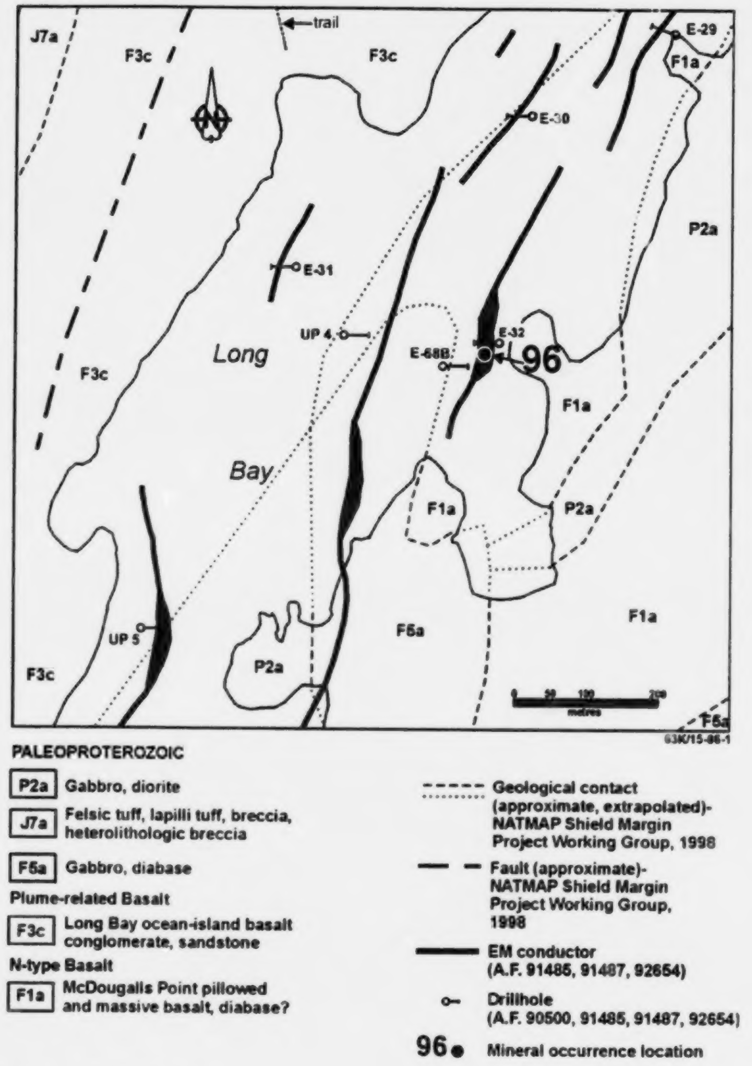

J7a
F3c
trail
F3c
E-29
F1a
E-30
P2a
E-31
UP 4
E-32
E-68B
96
F3c
Long
Bay
F1a
F1a
P2a
F1a
F5a
UP 5
P2a
F3c
0
50
100
200
metres
F5a
63K/15-96-1
PALEOPROTEROZOIC
P2a Gabbro, diorite
J7a Felsic tuff, lapilli tuff, breccia, heterolithologic breccia
F5a Gabbro, diabase
Plume-related Basalt
F3c Long Bay ocean-island basalt conglomerate, sandstone
N-type Basalt
F1a McDougalls Point pillowed and massive basalt, diabase?
Geological contact (approximate, extrapolated)- NATMAP Shield Margin Project Working Group, 1998
Fault (approximate)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 91485, 91487, 92654)
Drillhole (A.F. 90500, 91485, 91487, 92654)
96 Mineral occurrence location

Figure 96-1: Geological setting of occurrence 96.

LOCATION: 97

NAME: mineralization intersected by diamond drilling
UTM: 376450E, 6079930N
AREA: along east side of Long Bay, Elbow Lake
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage
AIRPHOTO: MB90025-138

EXPLORATION SUMMARY

In 1971 Noranda Exploration Company, Ltd. performed HLEM (Ronka Mk. III) surveys in the area. Some of the conductive responses were subsequently drilled by Noranda and Manitoba Mineral Resources, Ltd. (A.F. 90500, 91487, 92654).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 97-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). Long Bay basaltic conglomerate (unit F3c) occurs along the west side of Long Bay. Fine- to medium-grained, equigranular diabase (unit F5a) and fine- to coarse-grained, equigranular gabbro and melagabbro (unit P2a) intrude pillowed, massive, aphyric McDougalls Point basalt (unit F1a) along the east side of the bay.

Andesite and amphibolite dominate the lithologic sequence intersected in hole UP-4 (A.F. 90500). Rhyolitic tuff was noted at the top of the hole. Hole E-33 intersected a sequence of mafic "tuffs", rhyolites and minor "agglomerate" containing rounded fragments of andesite and rhyolite (A.F. 92654). It is unclear if the character of the "tuffaceous" units reflects primary depositional features, or is a result of subsequent deformation.

MINERALIZATION

An interval of "massive graphite" containing "frequent intervals of heavy pyrite in large stringers and bands" was intersected from 69.0-87.3 m (226.3-286.5 ft.) in hole UP-4 (A.F. 90500). The mineralized intervals in hole E-33 contain up to 20% pyrite usually associated with up to 50% graphite within schistose ("tuffaceous") units over the following intervals (A.F. 92654):

52.9-59.7 m (173.7-196.0 ft.)	5% pyrite, 30% graphite in dark grey "tuff", minor "agglomerate" intervals
60.0-65.2 m (197.0-214.0 ft.)	10-20% pyrite, 5-40% graphite in polymictic "agglomerate" and dark grey "tuff"
65.8-67.1 m (216.0-220.3 ft.)	10% pyrite, 50% graphite, laminated
68.3-70.8 m (224.0-232.2 ft.)	20% pyrite in finely laminated mafic "tuff"

GEOCHEMICAL DATA

The following values were obtained from sulphide-rich intervals in hole UP-4 (A.F. 90500):

Assays from pyrite-rich areas in hole E-33 returned minor metal values: tr-0.03% Cu, tr Zn, and nil to tr Au (A.F. 92654) (see table below).

Hole No.	Interval	%Cu	%Zn	%Ni	Au
UP-4	56.4-57.9 m (185.0-190.0 ft.)		tr		
	67.3-69.0 m (220.9-226.3 ft.)		tr		tr
	73.2-74.7 m (240.0-245.0 ft.)	0.04	tr		
	77.3-79.1 m (253.5-259.5 ft.)		tr		
	79.9-81.4 m (262.0-267.0 ft.)	0.06	0.05		
	82.3-84.7 m (270.0-278.0 ft.)	0.05	0.22	0.04	
	86.3-87.3 m (283.0-286.5 ft.)	0.09		0.04	

CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation. The presence of graphite suggests a biogenic contribution.

REFERENCES

A.F. 90500, 91487 and 92654; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group
1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

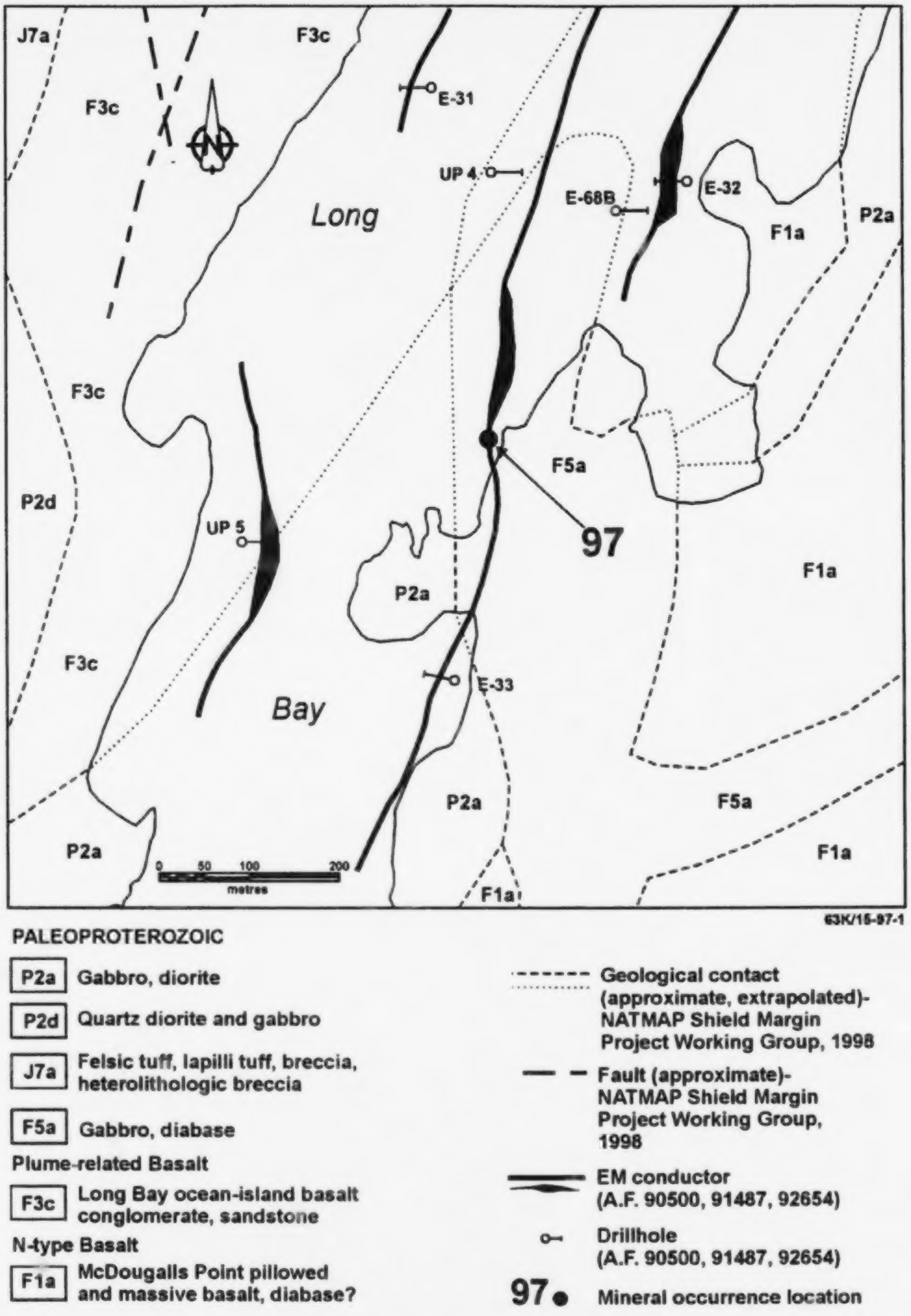

J7a
F3c
F3c
E-31
UP 4
E-68B
E-32
Long
P2a
F1a
F3c
F5a
97
P2d
UP 5
F1a
P2a
F3c
E-33
Bay
P2a
F5a
P2a
F1a
0 50 100 200
metres
F1a
63K/15-97-1
PALEOPROTEROZOIC
P2a Gabbro, diorite
P2d Quartz diorite and gabbro
J7a Felsic tuff, lapilli tuff, breccia, heterolithologic breccia
F5a Gabbro, diabase
Plume-related Basalt
F3c Long Bay ocean-island basalt conglomerate, sandstone
N-type Basalt
F1a McDougalls Point pillowed and massive basalt, diabase?
Geological contact (approximate, extrapolated)- NATMAP Shield Margin Project Working Group, 1998
Fault (approximate)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 90500, 91487, 92654)
Drillhole (A.F. 90500, 91487, 92654)
97 Mineral occurrence location

Figure 97-1: Geological setting of occurrence 97.

LOCATION: 98

NAME: mineralization intersected by diamond drilling
UTM: 376210E, 6079795N
AREA: under west side near south end of Long Bay, Elbow Lake
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage
AIRPHOTO: MB90025-138

EXPLORATION SUMMARY

In 1972 Noranda Exploration Company drilled several holes to test some EM conductors under Long Bay, Elbow Lake (A.F. 90500).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 98-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The Long Bay basaltic conglomerate (unit F3c) occurs along the west side of Long Bay. Fine- to medium-grained, equigranular diabase (unit 17a) and fine- to coarse-grained, equigranular gabbro and melagabbro (unit P2a) intrude pillowed, massive, aphyric McDougalls Point basalt (unit F1a) along the east side of the bay.

The dominant lithology intersected by hole UP-5 consists of slightly chloritic, mafic, volcanic rock ("andesite") with schistose intervals, and a lesser felsic ("rhyolitic") laminated "tuff" interval at the bottom (A.F. 90500).

MINERALIZATION

Hole UP-5 intersected an interval between 70.7-78.3 m (232.0-256.8 ft.) containing "fair to heavy pyrite and graphite in large stringers and bands" (A.F. 90500). The under- and overlying rocks to this unit contain lesser quantities of pyrite.

GEOCHEMICAL DATA

The following values were returned from an assay of the sulphide-bearing interval: 0.03% Cu, tr Zn, nil Au, 54.8 g Ag/t (1.6 oz. Ag/ton).

CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation. The presence of graphite suggests a biogenic contribution.

REFERENCES

A.F. 90500, 91487, 92654; Cancelled Assessment File, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

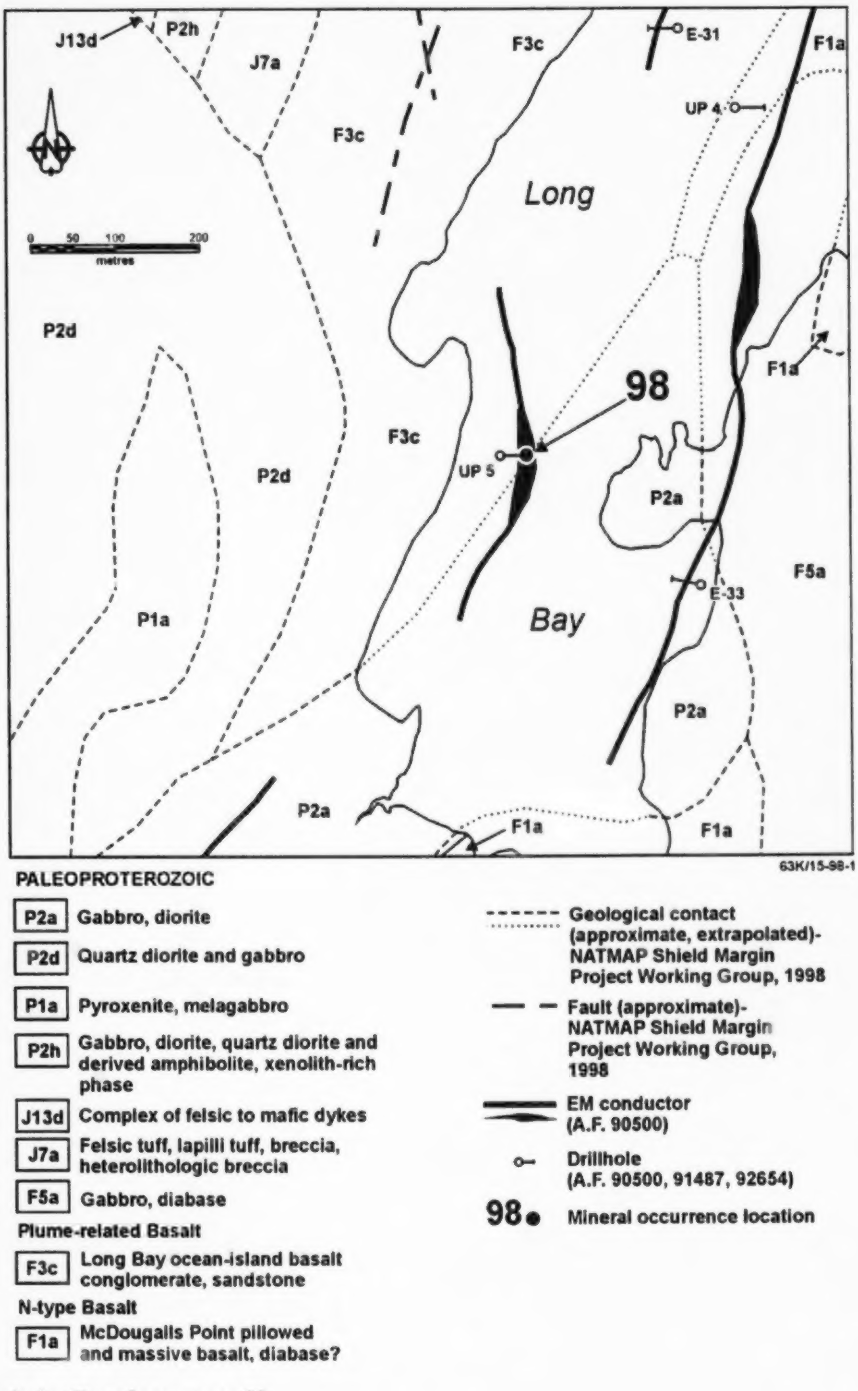

J13d
P2h
J7a
F3c
E-31
F1a
UP 4
0 50 100 200
metres
Long
P2d
98
F1a
F3c
UP 5
P2d
P2a
F5a
P1a
E-33
Bay
P2a
P2a
F1a
F1a
63K/15-98-1
PALEOPROTEROZOIC
P2a Gabbro, diorite
P2d Quartz diorite and gabbro
P1a Pyroxenite, melagabbro
P2h Gabbro, diorite, quartz diorite and derived amphibolite, xenolith-rich phase
J13d Complex of felsic to mafic dykes
J7a Felsic tuff, lapilli tuff, breccia, heterolithologic breccia
F5a Gabbro, diabase
Plume-related Basalt
F3c Long Bay ocean-island basalt conglomerate, sandstone
N-type Basalt
F1a McDougalls Point pillowed and massive basalt, diabase?
Geological contact (approximate, extrapolated)- NATMAP Shield Margin Project Working Group, 1998
Fault (approximate)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 90500)
Drillhole (A.F. 90500, 91487, 92654)
98 Mineral occurrence location

Figure 98-1: Geological setting of occurrence 98.

LOCATION: 99

NAME: mineralization intersected by diamond drilling
UTM: 376210E, 6079275N
AREA: at south end of Long Bay, Elbow Lake
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage, then traverse
AIRPHOTO: MB90025-138

EXPLORATION SUMMARY

In 1971 Noranda Exploration Company, Ltd. performed HLEM (Ronka Mk. III) surveys in the area. Some of the conductive responses were subsequently drilled by Manitoba Mineral Resources, Ltd. (A.F. 91487, 92654).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 99-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by pillowed and massive aphyric flows of the McDougalls Point basalt (unit F1a) which has been intruded to the NW by gabbro and melagabbro (unit P2a) of the Long Bay gabbro complex.

Hole E-34 intersected massive, green, mafic, volcanic rocks, minor feldspar porphyry, and dark grey to black "tuffaceous" intervals (A.F. 92654). It is unclear if the "tuffaceous" character of the latter units is a primary depositional feature, or has been tectonically produced.

MINERALIZATION

Two intervals containing 10% disseminated, fine-grained pyrite in dark grey to black "tuff" were intersected between 30.8-33.1 m, and 34.0-34.6 m (101.0-108.6 ft., and 111.7-113.4 ft.) in hole E-34 (A.F. 92654).

GEOCHEMICAL DATA

Assays of the sulphide-rich intervals returned minor metal values: tr Cu and Zn, nil to tr Au (A.F. 92654).

CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation.

REFERENCES

A.F. 90500, 91487 and 92654; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

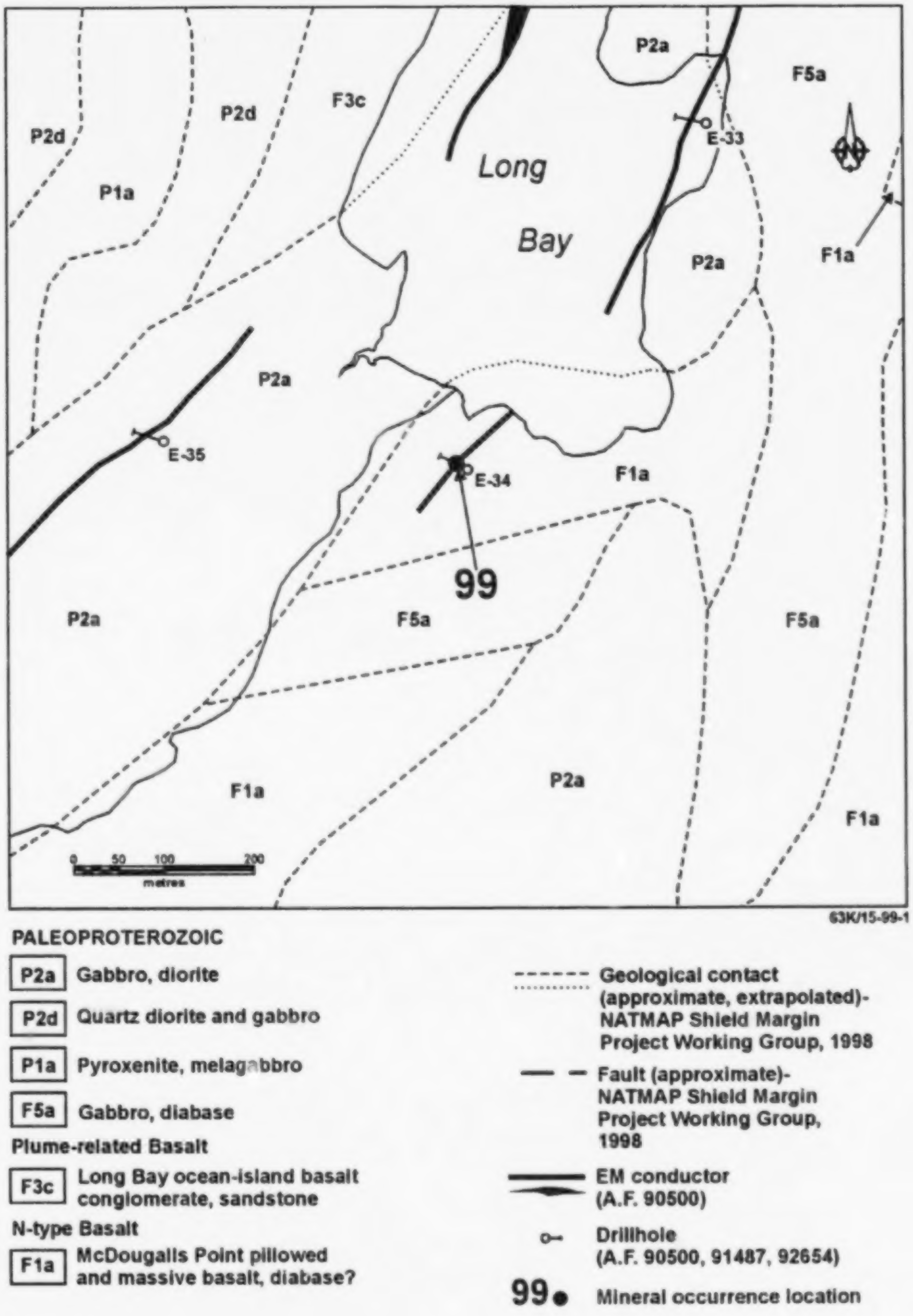

P2a
F5a
P2d
P2d
F3c
E-33
Long
Bay
P1a
P2a
F1a
P2a
E-35
E-34
F1a
99
P2a
F5a
F5a
F1a
P2a
F1a
0 50 100 200
metres
63K/15-99-1
PALEOPROTEROZOIC
P2a Gabbro, diorite
P2d Quartz diorite and gabbro
P1a Pyroxenite, melagabbro
F5a Gabbro, diabase
Plume-related Basalt
F3c Long Bay ocean-island basalt conglomerate, sandstone
N-type Basalt
F1a McDougalls Point pillowed and massive basalt, diabase?
Geological contact (approximate, extrapolated)- NATMAP Shield Margin Project Working Group, 1998
Fault (approximate)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 90500)
Drillhole (A.F. 90500, 91487, 92654)
99 Mineral occurrence location

Figure 99-1: Geological setting of occurrence 99.

LOCATION: 100

NAME: mineralization intersected by diamond drilling
UTM: 384760E, 6090345N
AREA: approximately 600 m SSE of south end of Muhekun Lake
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage, then traverse
AIRPHOTO: MB90025-58

EXPLORATION SUMMARY

In 1981 Gränges Exploration AB drilled several geophysical (EM?) anomalies in the Elbow Lake area (A.F. 93052).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 100-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by dark green, aphyric, pillowed, mafic flows (unit U1b) (Schledewitz, 1993a, b). The Gauthier Lake pluton, consisting of medium- to coarse-grained, equigranular, biotite±hornblende granodiorite (unit P7b), occurs to the west, and a sequence of hornblende-plagioclase-phyric volcanic rocks with abundant hornblende-plagioclase and plagioclase-phyric intermediate dykes and sills (grouped under unit J13d) is exposed to the east.

Hole HAS-4 intersected a sequence of medium grey to medium green andesite tuffs and a light to medium grey rhyolite tuff intercalated with a granitic intrusion (A.F. 93052). It is unclear if the character of the tuff is a primary depositional feature or the result of subsequent tectonic influences.

MINERALIZATION

The rhyolite tuff contains several sulphide-rich intervals as follows (A.F. 93052):

57.7-60.7 m (189.4-199.0 ft.)	60-70% pyrrhotite, 10-20% pyrite, tr-1% chalcopyrite
64.2-64.5 m (210.5-211.5 ft.)	40% pyrrhotite and pyrite
67.7-68.2 m (222.0-223.8 ft.)	80% pyrrhotite and pyrite

GEOCHEMICAL DATA

The following assays were obtained from sampled sulphide-bearing intervals in hole HAS-4 (A.F. 93052) (see table below).

Hole No.	Interval	%Cu	%Zn	g Au/t	g Ag/t
HAS-4	9.9-10.2 m (32.5-33.6 ft.)	0.05	0.5		
	19.2-20.1 m (63.0-66.0 ft.)	0.01	0.01	0.05	0.5
	37.2-37.5 m (122.0-123.0 ft.)			0.05	0.5
	47.9-48.8 m (157.0-160.0 ft.)			0.05	0.5
	56.4-57.3 m (185.0-188.0 ft.)	0.01	0.01	0.05	0.5
	57.3-57.7 m (188.0-189.4 ft.)	0.01	0.03	0.05	0.5
	57.7-59.1 m (189.4-194.0 ft.)	0.11	0.25	0.05	1.0
	59.1-60.7 m (194.0-199.0 ft.)	0.22	0.20	0.05	1.0
	60.7-62.2 m (199.0-204.0 ft.)	0.04	0.01	0.05	0.5
	62.2-63.7 m (204.0-209.0 ft.)	0.05	0.15	0.05	0.5
	63.7-65.2 m (209.0-214.0 ft.)	0.05	0.16	0.05	0.5
	65.2-66.4 m (214.0-218.0 ft.)	0.05	0.13	0.05	0.5
	66.4-67.7 m (218.0-222.0 ft.)	0.05	0.14	0.05	0.5
	67.7-68.2 m (222.0-223.8 ft.)	0.11	0.20	0.05	1.5
	68.2-68.9 m (223.8-226.0 ft.)	0.03	0.03	0.05	0.5

CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation.

REFERENCES

A.F. 93052; Cancelled Assessment File, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Schledewitz, D.C.P.

1993a: Geology of the Webb Lake-Fay Lake area (NTS 63K/14NE and 63K/15NW); in Manitoba Energy and Mines, Energy and Minerals Division, Report of Activities, 1993, pp. 29-32.

1993b: Webb Lake-Fay Lake (east half); Manitoba Energy and Mines, Energy and Minerals Division, Preliminary Map 1993-K4 (NTS 63K/15NW), 1:20 000.

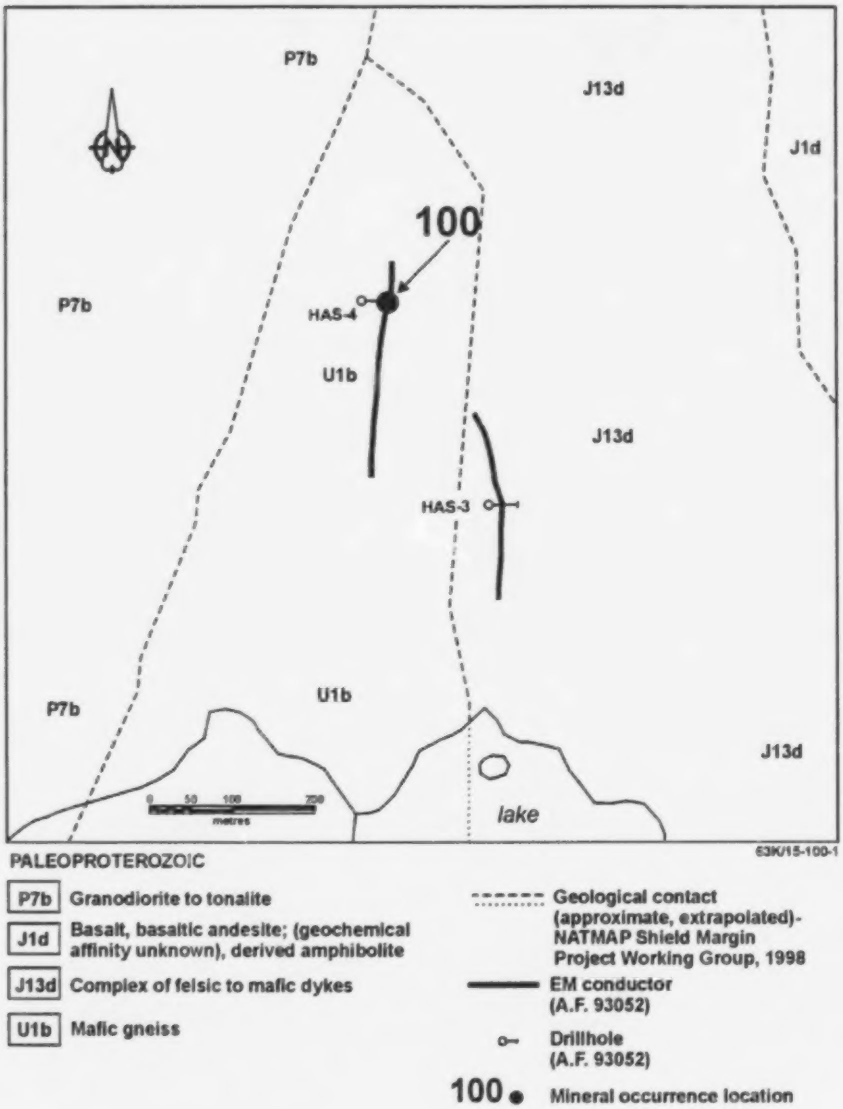

P7b
J13d
J1d
100
HAS-4
U1b
P7b
J13d
HAS-3
P7b
U1b
J13d
lake
0 50 100 200
metres
63K/15-100-1
PALEOPROTEROZOIC
P7b Granodiorite to tonalite
J1d Basalt, basaltic andesite; (geochemical affinity unknown), derived amphibolite
J13d Complex of felsic to mafic dykes
U1b Mafic gneiss
Geological contact (approximate, extrapolated)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 93052)
Drillhole (A.F. 93052)
100 Mineral occurrence location

Figure 100-1: Geological setting of occurrence 100.

LOCATION: 101

NAME: mineralization intersected by diamond drilling
UTM: 378230E, 6080385N
AREA: under Elbow Lake, approximately 400 m S of west end of Webb Island
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage
AIRPHOTO: MB90025-117

EXPLORATION SUMMARY

In 1971 Noranda Exploration Company, Ltd. performed HLEM (Ronka Mk. III) surveys in the area. Some of the conductive responses were subsequently drilled by Manitoba Mineral Resources, Ltd. (A.F. 91487, 92654).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 101-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). Pillowed and massive aphyric and plagioclase-phyric flows of the McDougalls Point basalt (units F1a) outcrop to the west, and Long Bay basaltic conglomerate (unit F3c) occurs to the north on Webb Island. The Elbow Lake shear zone (Galley *et al.*, 1987, 1989; Syme, 1990, 1991, 1992) is located approximately 700 m west of the occurrence. In this area the thickness of the shear zone is approximately 2600 m (Syme and Whalen, 1992).

The sequence intersected in hole E-36 consists of interlayered rhyolitic tuff and agglomerate, and black graphitic "tuff" (A.F. 92654). Green, mafic, volcanic rock ("andesite") occurs at the top and bottom of the hole. The agglomeratic intervals contain <1 to 2 cm rhyolitic fragments.

MINERALIZATION

The following mineralized intervals were intersected in hole E-36 (A.F. 92654):

Interval	Mineralization
63.0-66.5 m (206.6-218.1 ft.)	10-80% pyrite, to 10% graphite in agglomerate and rhyolitic breccia
76.4-78.6 m (250.8-258.0 ft.)	10% pyrite as irregular blebs and stringers in black, graphitic "tuff"

GEOCHEMICAL DATA

Assays from sulphide-bearing intervals returned minor metal values: tr-0.09% Cu, tr-0.04% Zn, nil Au (A.F. 92654).

CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation. The presence of graphite suggests a biogenic contribution.

REFERENCES

A.F. 91487 and 92654; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

Galley, A.G., Ames, D.E. and Franklin, J.M.

1987: Geological setting of gold mineralization in the Elbow Lake region, Manitoba; in Manitoba Energy and Mines, Minerals Division, Report of Field Activities, 1987, pp.175-177.

1989: Results of studies on the gold metallogeny of the Flin Flon belt; in Investigations by the Geological Survey of Canada in Manitoba and Saskatchewan during the 1984-1989 Mineral Development Agreements, Geological Survey of Canada, Open File 2133, pp.25-32.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Syme, E.C.

1990: Elbow Lake project (part of NTS 63K/15W); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1990, pp.49-57.

1991: Elbow Lake project - Part A: supracrustal rocks and structural setting; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1991, pp.14-27.

1992: Elbow Lake Project - Part A: Supracrustal rocks; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1992, pp.32-46.

Syme, E.C. and Whalen, J.B.

1992: Geology, Elbow Lake, Manitoba; Geological Survey of Canada, Preliminary 1:20 000 map, Shield-Margin Project, File ELBOW92.PS.

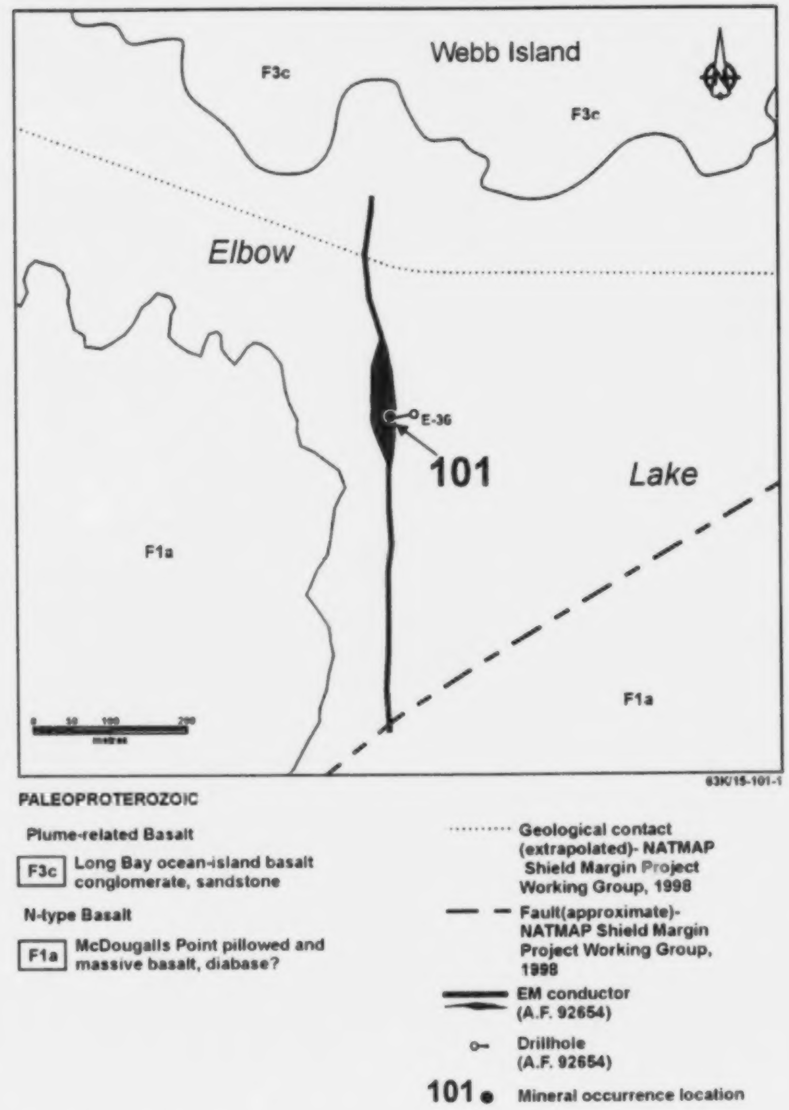

Webb Island
F3c
F3c
Elbow
E-36
101
Lake
F1a
F1a
0
50
100
200
metres
63K/15-101-1
PALEOPROTEROZOIC
Plume-related Basalt
F3c
Long Bay ocean-island basalt conglomerate, sandstone
N-type Basalt
F1a
McDougalls Point pillowed and massive basalt, diabase?
Geological contact (extrapolated)- NATMAP Shield Margin Project Working Group, 1998
Fault(approximate)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 92654)
Drillhole (A.F. 92654)
101
Mineral occurrence location

Figure 101-1: Geological setting of occurrence 101.

LOCATION: 102

NAME: mineralization intersected by diamond drilling
UTM: 378140E, 6079755N
AREA: under Elbow Lake, approximately 900 m S of W end of Webb Island
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage
AIRPHOTO: MB90025-118

EXPLORATION SUMMARY

In 1971 Noranda Exploration Company, Ltd. performed HLEM (Ronka Mk. III) surveys in the area. Some of the conductive responses were subsequently drilled by Manitoba Mineral Resources, Ltd. (A.F. 91487, 92654).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 102-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by pillowed and massive aphyric flows of the McDougalls Point basalt (unit F1a). Pillow top directions suggest the occurrence is located along the axis of a syncline. The Elbow Lake shear zone (Galley *et al.*, 1987, 1989; Syme, 1990, 1991, 1992) is located approximately 700 m west of the occurrence. In this area the thickness of the shear zone is approximately 2300 m (Syme and Whalen, 1992).

Agglomeratic, sulphide-bearing intervals, containing 5% fine-grained, disseminated pyrite and up to 10% graphite, form units separated by finely laminated dacitic "tuff" intervals (A.F. 92654). A white cherty layer (rhyolite?), with a poorly defined fragmental texture, occurs between 19.8-54.3 m (65.0-178.0 ft.).

MINERALIZATION

An interval containing 75% massive pyrite in agglomerate was intersected by hole E-37 from 13.1-15.8 m (43.0-52.0 ft.) (A.F. 92654). Dark, fine-grained pyrite is described as replacing subrounded fragments in the agglomerate.

GEOCHEMICAL DATA

Assays from sulphide-bearing intervals returned minor metal values: 0.02-0.03% Cu, 0.04-0.05% Zn, tr to 0.68 g Au/t (0.02 oz. Au/ton), nil Ag (A.F. 92654).

CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation. The presence of graphite suggests a biogenic contribution.

REFERENCES

A.F. 90511, 91487, 92654; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

Galley, A.G., Ames, D.E. and Franklin, J.M.

1987: Geological setting of gold mineralization in the Elbow Lake region, Manitoba; in Manitoba Energy and Mines, Minerals Division, Report of Field Activities, 1987, pp.175-177.

1989: Results of studies on the gold metallogeny of the Flin Flon belt; in Investigations by the Geological Survey of Canada in Manitoba and Saskatchewan during the 1984-1989 Mineral Development Agreements, Geological Survey of Canada, Open File 2133, pp.25-32.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Syme, E.C.

1990: Elbow Lake project (part of NTS 63K/15W); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1990, pp.49-57.

1991: Elbow Lake project - Part A: supracrustal rocks and structural setting; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1991, pp.14-27.

1992: Elbow Lake Project - Part A: Supracrustal rocks; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1992, pp.32-46.

Syme, E.C. and Whalen, J.B.

1992: Geology, Elbow Lake, Manitoba; Geological Survey of Canada, Preliminary 1:20 000 map, Shield-Margin Project, File ELBOW92.PS.

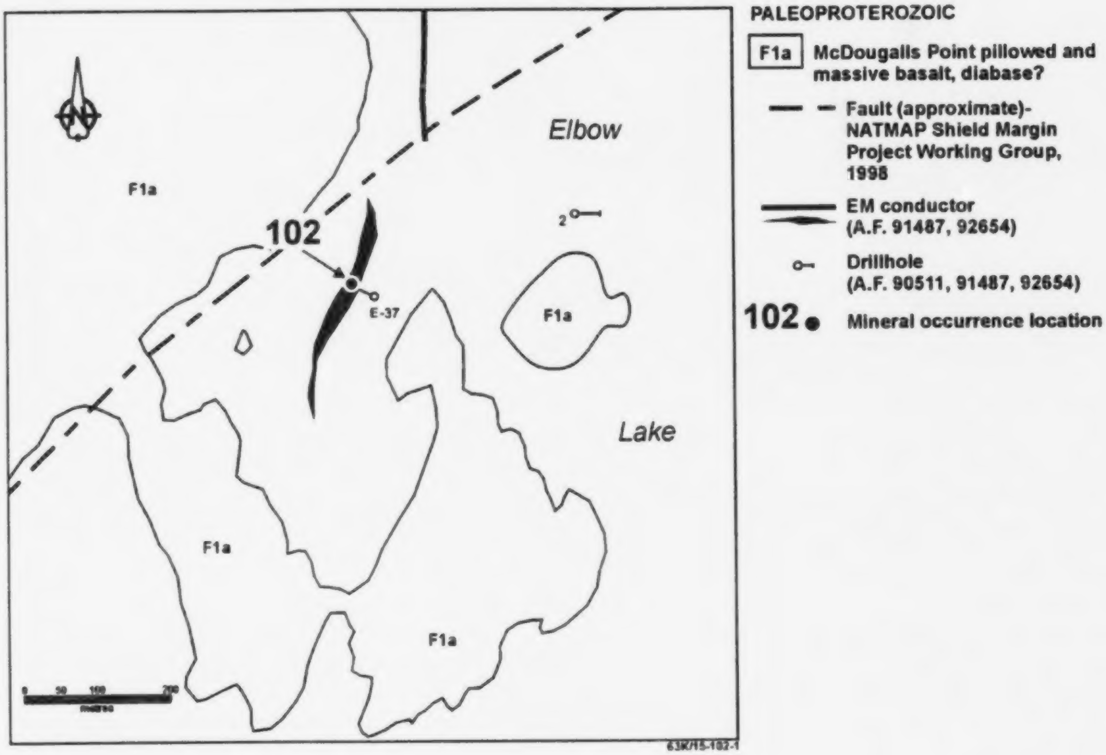

PALEOPROTEROZOIC
F1a McDougalls Point pillowed and massive basalt, diabase?
Fault (approximate)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 91487, 92654)
Drillhole (A.F. 90511, 91487, 92654)
102 ● Mineral occurrence location
N
F1a
102
E-37
2
Elbow
Lake
F1a
F1a
F1a
F1a
0 50 100 200
metres
63K/15-102-1

Figure 102-1: Geological setting of occurrence 102.

LOCATION: 103

NAME: mineralization intersected by diamond drilling
UTM: 377470E, 6077415N
AREA: under Elbow Lake, W of McDougalls Point
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage
AIRPHOTO: MB90025-136

EXPLORATION SUMMARY

In 1972-73 Manitoba Mineral Resources Ltd. performed an HLEM survey utilizing Geonics EM-17 and ABEM GUN equipment (A.F. 92149). Most of the conductors outlined by this survey were drill tested in 1974 (A.F. 92148, 92654).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 103-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by pillowed and massive aphyric flows of the McDougalls Point basalt (unit F1a). Dark pink to red, foliated, coarse-grained, equigranular to subporphyritic hornblende-biotite granodiorite (unit P7a) of the Big Rat Lake pluton occurs to the west.

The sequence intersected by hole E-51 consists of massive, altered, mafic volcanic rock ("andesite") with massive rhyolite flows and graphitic schist intervals (A.F. 92654). Schistose siltstone forms a minor constituent of the stratigraphy. Granodiorite, probably part of the Big Rat Lake pluton, was intersected at the bottom of the hole.

MINERALIZATION

The following mineralized intervals were intersected in hole E-51 (A.F. 92654) (see table below).

Hole No.	Interval	Mineralization
E-51	60.0-66.8 m (197.0-219.3 ft.)	"dark brownish grey, aphanitic, massive" pyrite, with 20% pyrite stringers
	67.5-69.7 m (221.4-228.7 ft.)	30% fine pyrite stringers in graphitic schist
	69.7-70.1 m (228.7-230.0 ft.)	40% pyrite as vug fillings in grey massive rhyolite
	71.3-72.4 m (234.0-237.5 ft.)	60% "cavernous" pyrite (vug fillings?) in massive graphite
	73.0-73.2 m (239.6-240.3 ft.)	60% "cavernous" pyrite (vug fillings?) in massive graphite
	73.8-75.3 m (242.0-247.2 ft.)	60% "cavernous" pyrite (vug fillings?) in massive graphite
	78.9-79.6 m (259.0-261.0 ft.)	60% "cavernous" pyrite (vug fillings?) in massive graphite
	129.8-137.8 m (426.0-452.0 ft.)	50% "black, massive" pyrite, 40% pyrrhotite, 10% metallic pyrite stringers
	137.8-153.6 m (452.0-504.0 ft.)	30% pyrrhotite, 30% pyrite, finely disseminated in rhyolite
	153.6-155.4 m (504.0-510.0 ft.)	10% finely disseminated pyrrhotite, in "syenite" (granodiorite)
	157.8-158.1 m (517.6-518.6 ft.)	40% pyrrhotite, 50% graphite in broken core, in schistose siltstone

GEOCHEMICAL DATA

Assays obtained from the mineralized intervals returned low values: nil to 0.02% Cu, nil to 0.34 g Au/t (0.01 oz. Au/ton) (A.F. 92654).

CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation. The presence of graphite suggests a biogenic contribution to the lithologies of this assemblage.

REFERENCES

A.F. 91487, 92148, 92149 and 92654; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Energy and Minerals Division

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

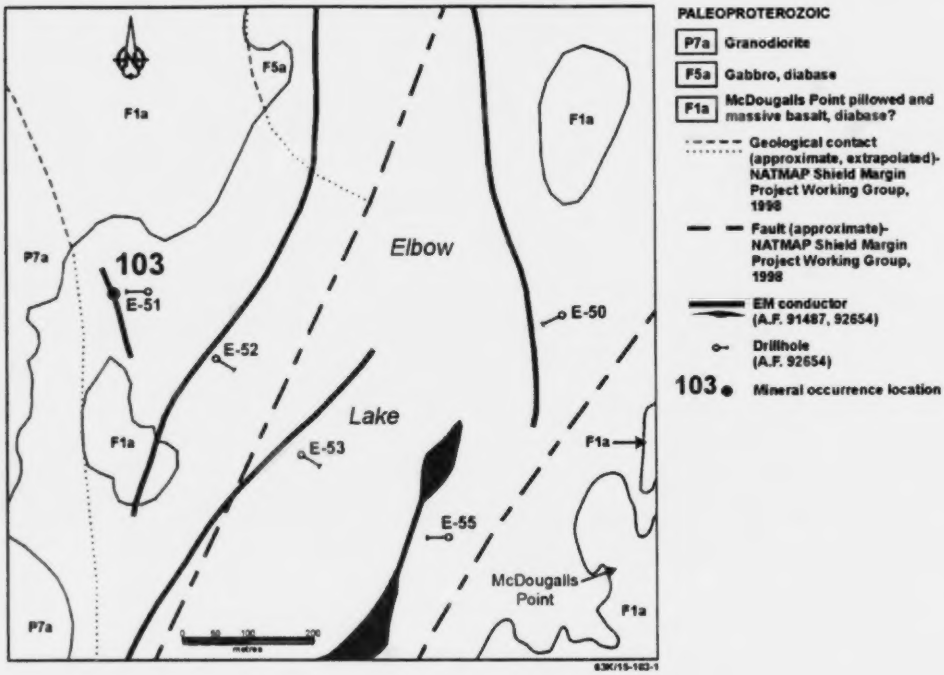

N
F5a
F1a
F1a
P7a
103
E-51
E-52
Elbow
E-50
Lake
E-53
F1a
F1a
E-55
McDougalls Point
F1a
P7a
0 50 100 200
metres
63K/15-103-1
PALEOPROTEROZOIC
P7a Granodiorite
F5a Gabbro, diabase
F1a McDougalls Point pillowed and massive basalt, diabase?
Geological contact (approximate, extrapolated)- NATMAP Shield Margin Project Working Group, 1998
Fault (approximate)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 91487, 92654)
Drillhole (A.F. 92654)
103 ● Mineral occurrence location

Figure 103-1: Geological setting of occurrence 103.

LOCATION: 104

NAME: mineralization intersected by diamond drilling
UTM: 378005E, 6077590N
AREA: under Elbow Lake, W of north end of McDougalls Point
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage
AIRPHOTO: MB90025-120

EXPLORATION SUMMARY

In 1972-73 Manitoba Mineral Resources Ltd. performed an HLEM survey utilizing Geonics EM-17 and ABEM GUN equipment (A.F. 92149). Most of the conductors outlined by this survey were drill tested in 1974 (A.F. 92148, 92654).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 104-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by pillowed and massive, plagioclase-phyric McDougalls Point basalt (unit F1a). Dark pink to red, foliated, coarse-grained, equigranular to subporphyritic hornblende-biotite granodiorite (unit P7a) of the Big Rat Lake pluton occurs to the west.

Holes E-48B and -50 intersected a sequence consisting of massive, mafic volcanic flows and finely laminated "tuffs", finely laminated and schistose graphitic siltstone and fine quartzite (A.F. 92654). It is unclear if the finely laminated character of some of these units is a result of tectonic influences or a primary depositional feature.

MINERALIZATION

Two thin intervals containing 10% pyrite were intersected between 110.6-111.1 m (363.0-364.5 ft.) and 119.5-119.8 m (392.0-393.0 ft.) in hole E-48B (A.F. 92654). The host rock is finely laminated siltstone containing 40% graphite. Hole E-50 intersected graphitic siltstone and schist containing 10% pyrite as thin stringers from 50.6-83.1 m (166.0-272.8 ft.).

GEOCHEMICAL DATA

No assays were reported in the assessment files for these mineralized intervals.

CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation. The presence of graphite suggests a biogenic contribution to the lithologies associated with this occurrence.

REFERENCES

A.F. 91487, 92148, 92149 and 92654; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

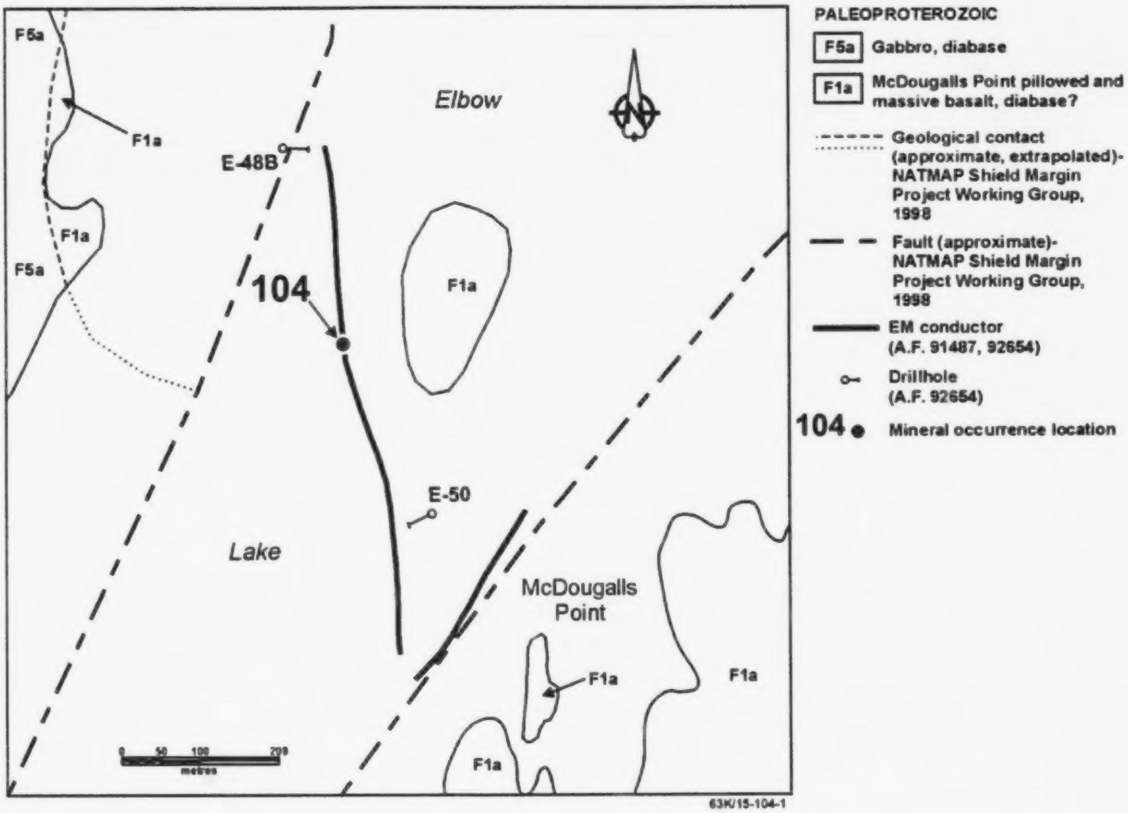

F5a
F1a
E-48B
Elbow
F1a
F5a
104
F1a
Lake
E-50
McDougalls Point
F1a
F1a
F1a
0 50 100 200
metres
63K/15-104-1
PALEOPROTEROZOIC
F5a Gabbro, diabase
F1a McDougalls Point pillowed and massive basalt, diabase?
Geological contact (approximate, extrapolated)- NATMAP Shield Margin Project Working Group, 1998
Fault (approximate)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 91487, 92654)
Drillhole (A.F. 92654)
104 ● Mineral occurrence location

Figure 104-1: Geological setting of occurrence 104.

LOCATION: 105

NAME: mineralization intersected by diamond drilling
UTM: 385400E, 6089945N
AREA: approximately 1400 m SE of Muhekun Lake
ACCESS: via bush plane to north end of Sexton (Hasset) Lake (informal names), then traverse
AIRPHOTO: MB90025-27

EXPLORATION SUMMARY

In 1971 Noranda Exploration Company, Ltd. performed HLEM (Ronka Mk. III) surveys in the area. Some of the conductive responses were subsequently drilled by Manitoba Mineral Resources, Ltd. (A.F. 91487, 92654). Gränges Exploration Aktiebolag performed geophysical surveys in the area and drilled some of the responses in 1981 (A.F. 93052).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 105-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by well foliated and tectonically layered mafic flows (unit J1d). Hornblende-plagioclase-phyric volcaniclastic rocks with abundant hornblende-plagioclase and plagioclase-phyric, intermediate dykes and sills (grouped under unit J13d) occur to the west. Coarse-grained, plagioclase-phyric to equigranular, hornblende-biotite granodiorite to quartz diorite (unit P7b) of the Gants Lake batholith occurs to the east (Schledewitz, 1993a, b).

Hole E-15 intersected mafic to intermediate schist and "tuff" intervals interlayered with rhyolite, feldspar porphyry and amphibolite (A.F. 92654).

MINERALIZATION

Pyritic and graphitic intervals were intersected in hole E-15 (A.F. 92654). The mineralization is associated with well foliated to schistose "tuffaceous" intervals, as follows:

Hole No.	Interval	Mineralization
E-15	17.0-17.2 m (55.7-56.4 ft.)	to 20% pyrite
	17.8-18.3 m (58.5-59.9 ft.)	10-20% pyrite, associated with graphite
	22.3-34.3 m (73.2-112.6 ft.)	to 25% pyrite, very graphitic
	35.1-37.6 m (115.0-123.3 ft.)	to 20% pyrite, moderately graphitic

GEOCHEMICAL DATA

Assays of mineralized intervals in hole E-15 returned the following values (A.F. 92654):

Hole No.	Interval	%Cu	%Zn	g Au/t (oz. Au/ton)
E-15	17.8-18.3 m (58.5-59.9 ft.)	0.10	0.04	nil
	22.3-23.0 m (73.2-75.5 ft.)	0.09	0.02	tr
	23.0-24.0 m (75.5-78.6 ft.)	0.06	tr	tr
	24.3-25.9 m (79.8-85.0 ft.)	0.05	0.03	0.34 (0.01)
	25.9-27.4 m (85.0-90.0 ft.)	0.05	0.07	tr
	27.4-29.0 m (90.0-95.0 ft.)	0.04	0.02	tr
	29.0-30.5 m (95.0-100.0 ft.)	0.05	0.12	tr
	30.5-32.0 m (100.0-105.0 ft.)	0.07	0.16	nil
	32.0-33.5 m (105.0-110.0 ft.)	0.03	0.07	tr
	33.5-34.3 m (110.0-112.6 ft.)	0.08	0.28	tr
	35.1-36.8 m (115.0-120.7 ft.)	0.03	0.05	tr
	37.2-37.6 m (121.9-123.4 ft.)	0.05	0.03	tr

CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation. The presence of graphite suggests a biogenic contribution. It appears the layered character of the "tuffs" may be tectonically induced rather than a primary depositional feature.

REFERENCES

A.F. 91487, 92654; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Schledewitz, D.C.P.

1993a: Geology of the Webb Lake-Fay Lake area (NTS 63K/14NE and 63K/15NW); in Manitoba Energy and Mines, Energy and Minerals Division, Report of Activities, 1993, pp. 29-32.

1993b: Webb Lake-Fay Lake (east half); Manitoba Energy and Mines, Energy and Minerals Division, Preliminary Map 1993-K4 (NTS 63K/15NW), 1:20 000.

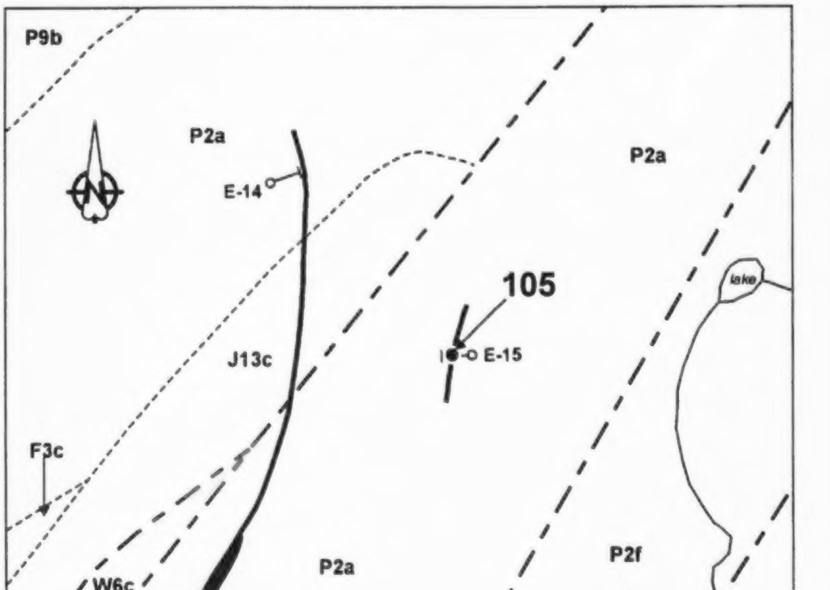

P9b
P2a
E-14
105
E-15
J13c
F3c
W6c
E-13
P2a
P2a
lake
P2f
P10b
P2f
P10b
0 50 100 200
metres
63K/15-105-1
PALEOPROTEROZOIC
W6c Mafic phyllonite +/- carbonate, cataclasite
P10b Quartz porphyry, feldspar porphyry, quartz-feldspar porphyry dyke complex
P9b Granite to granodiorite
P2f Diabase, diabase dyke complex
P2a Gabbro, diorite
J13c Rhyolite, dacite; quartz-porphyry, feldspar porphyry, quartz-feldspar porphyry
F3c Long Bay ocean-island basalt conglomerate, sandstone
Geological contact (approximate)- NATMAP Shield Margin Project Working Group, 1998
Fault (approximate)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 92654)
Drillhole (A.F. 92654)
105 Mineral occurrence location

Figure 105-1: Geological setting of occurrence 105.

LOCATION: 106

NAME: mineralization intersected by diamond drilling
UTM: 382030E, 6085200N
AREA: approximately 1400 m NNE of north end of Moen Bay, Elbow Lake
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage, then traverse
AIRPHOTO: MB90025-57

EXPLORATION SUMMARY

In 1971 Noranda Exploration Company, Ltd. performed HLEM (Ronka Mk. III) surveys in the area. Some of the conductive responses were subsequently drilled by Manitoba Mineral Resources, Ltd. (A.F. 91487, 92654). Gränges Exploration Aktiebolag performed geophysical surveys in the area and drilled some of the responses in 1981 (A.F. 93052).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 106-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by the Moen Bay pillowed basalt and breccia (unit F1c), heterolithologic breccia (unit F4c), and gabbro and diorite (unit P2a). Mafic phyllonite (unit W6c), intruded by aphyric rhyolite dykes, occurs to the east. The phyllonite is part of the Elbow Lake shear zone (Galley *et al.*, 1987, 1989; Syme, 1990, 1991, 1992).

The sequence intersected in hole HAS-10 is dominated by chloritic schist and well foliated mafic volcanic ("andesitic") rock (A.F. 93052). Minor quartz diorite and rhyolite are also present.

MINERALIZATION

Several sulphide-rich intervals were intersected in hole HAS-10 (A.F. 93052). The dominant sulphide is pyrite with lesser pyrrhotite. Sulphides occur over the following intervals (see table below).

Hole No.	Interval	Mineralization
HAS-10	28.7-29.2 m (94.2-95.8 ft.)	10% pyrite
	35.1-35.7 m (115.2-117.0 ft.)	10-15% pyrite
	47.7-48.1 m (156.5-157.8 ft.)	10% pyrrhotite
	50.7-51.4 m (166.5-168.6 ft.)	10% pyrrhotite
	57.0-60.0 m (187.0-197.0 ft.)	30% pyrite, scattered bands solid to near solid pyrrhotite
	67.7-68.1 m (222.2-223.3 ft.)	near solid to solid pyrite
	74.0-75.5 m (242.8-247.7 ft.)	near solid to solid pyrrhotite, 10% pyrite, tr chalcopyrite
	77.4-81.7 m (254.1-268.0 ft.)	20% pyrite, 10% pyrrhotite, tr chalcopyrite

GEOCHEMICAL DATA

No assays were reported for hole HAS-10.

CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation. The strongly foliated character of the units indicates significant tectonic modification.

REFERENCES

A.F. 91487, 92654 and 93052; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

Galley, A.G., Ames, D.E. and Franklin, J.M.

1987: Geological setting of gold mineralization in the Elbow Lake region, Manitoba; in Manitoba Energy and Mines, Minerals Division, Report of Field Activities, 1987, pp.175-177.

1989: Results of studies on the gold metallogeny of the Flin Flon belt; in Investigations by the Geological Survey of Canada in Manitoba and Saskatchewan during the 1984-1989 Mineral Development Agreements, Geological Survey of Canada, Open File 2133, pp.25-32.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Syme, E.C.

1990: Elbow Lake project (part of NTS 63K/15W); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1990, pp.49-57.

1991: Elbow Lake project - Part A: supracrustal rocks and structural setting; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1991, pp.14-27.

1992: Elbow Lake Project - Part A: Supracrustal rocks; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1992, pp.32-46.

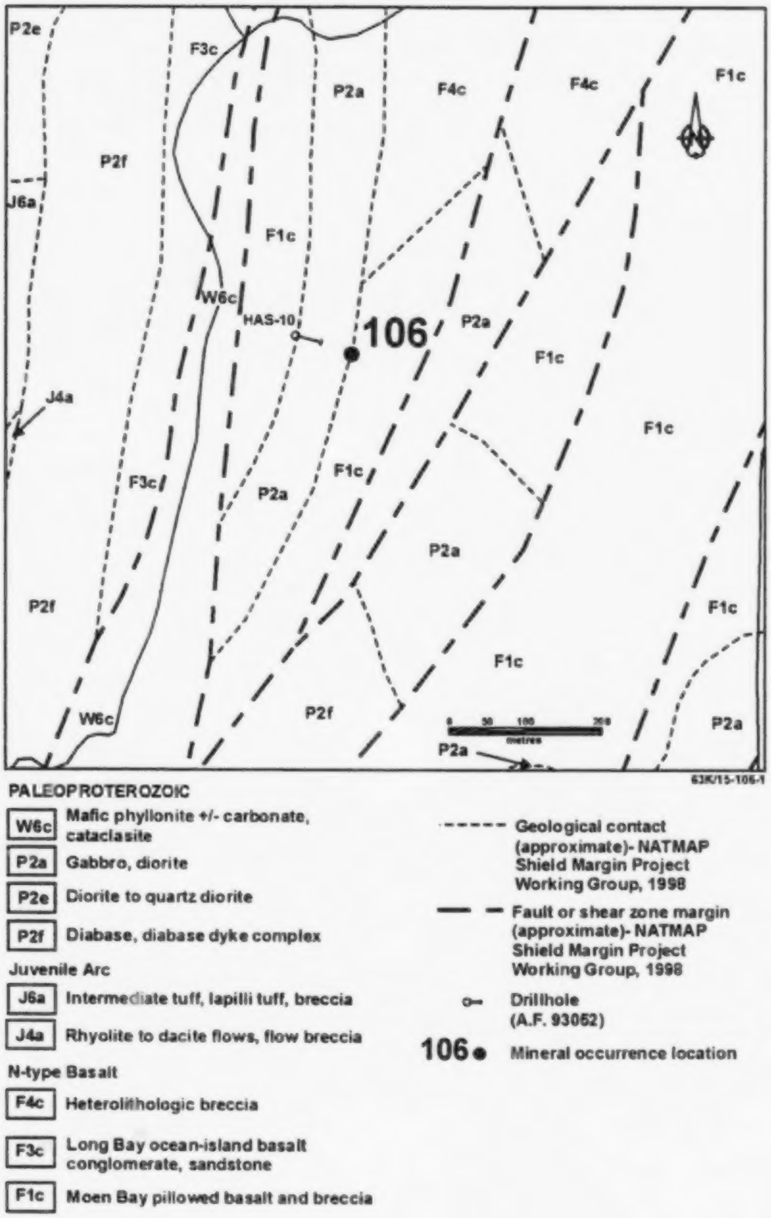

P2e
F3c
P2a
F4c
F4c
F1c
P2f
J6a
F1c
W6c
HAS-10
106
P2a
F1c
J4a
F1c
F3c
P2a
F1c
P2a
P2f
F1c
F1c
W6c
P2f
0 50 100 200
metres
P2a
P2a
63K/15-106-1
PALEOPROTEROZOIC
W6c Mafic phyllonite +/- carbonate, cataclasite
P2a Gabbro, diorite
P2e Diorite to quartz diorite
P2f Diabase, diabase dyke complex
Juvenile Arc
J6a Intermediate tuff, lapilli tuff, breccia
J4a Rhyolite to dacite flows, flow breccia
N-type Basalt
F4c Heterolithologic breccia
F3c Long Bay ocean-island basalt conglomerate, sandstone
F1c Moen Bay pillowed basalt and breccia
Geological contact (approximate)- NATMAP Shield Margin Project Working Group, 1998
Fault or shear zone margin (approximate)- NATMAP Shield Margin Project Working Group, 1998
Drillhole (A.F. 93062)
106 Mineral occurrence location

Figure 106-1: Geological setting of occurrence 106.

LOCATION: 107

NAME: mineralization intersected by diamond drilling
UTM: 379080E, 6075955N
AREA: under Elbow Lake, E of McDougalls Point
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage
AIRPHOTO: MB90025-120

EXPLORATION SUMMARY

In 1971 Noranda Exploration Company, Ltd. performed HLEM (Ronka Mk. III) surveys in the area. Some of the conductive responses were subsequently drilled by Manitoba Mineral Resources, Ltd. (A.F. 91485, 92654).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 107-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by mafic phyllonite (unit W6c), consisting of homogeneous chlorite±carbonate schist that is part of the Elbow Lake shear zone. This shear zone is approximately 850 m thick in this area (Syme and Whalen, 1992). Pillowed and massive, aphyric flows and synvolcanic intrusions of McDougalls Point basalt (unit F1a), and fine- to medium-grained, equigranular diabase (unit F5a) occur to the west of the shear zone.

The litholog for hole E-64 describes a finely laminated, schistose assemblage interpreted as representing a tuffaceous sequence (A.F. 92654). The character of this assemblage is most likely a result of tectonic influences associated with the development of the Elbow Lake shear zone rather than a primary depositional feature.

MINERALIZATION

Several intervals containing 5-20% pyrite in mafic "tuff" and graphitic schist were intersected by hole E-64 over the following intervals: 58.2-58.8 m (191.0-193.0 ft.); 66.3-67.7 m (217.6-222.2 ft.); 71.0-71.7 m (232.8-235.3 ft.); 71.9-72.5 m (236.0-238.0 ft.) (A.F. 92654).

GEOCHEMICAL DATA

Assays of mineralized intervals in hole E-64 returned the following values (A.F. 92654) (see table below).

Hole No.	Interval	%Cu	g Au/t (oz. Au/ton)
E-64	58.2-58.8 m (191.0-193.0 ft.)	nil	tr
	66.3-67.7 m (217.6-222.2 ft.)	tr	tr
	71.0-71.7 m (232.8-235.3 ft.)	tr	1.37 (0.04)

CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation. This occurrence has been strongly deformed by the Elbow Lake shear zone.

REFERENCES

A.F. 91485 and 92654; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Syme, E.C. and Whalen, J.B.

1992: Geology, Elbow Lake, Manitoba; Geological Survey of Canada, Preliminary 1:20 000 map, Shield-Margin Project, File ELBOW92.PS.

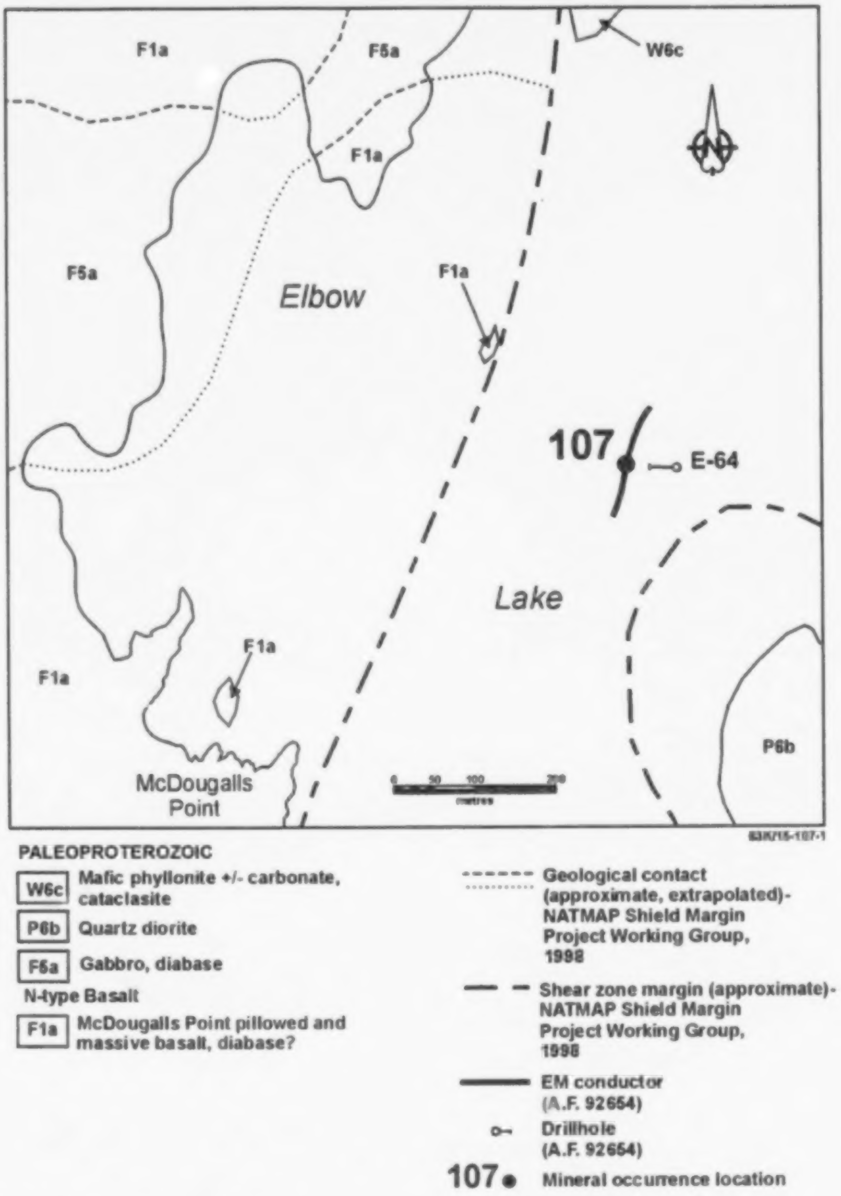

F1a
F5a
W6c
F1a
F5a
Elbow
F1a
107
E-64
Lake
F1a
F1a
P6b
McDougalls Point
0 50 100 200
metres
83K/15-107-1
PALEOPROTEROZOIC
W6c Mafic phyllonite +/- carbonate, cataclasite
P6b Quartz diorite
F5a Gabbro, diabase
N-type Basalt
F1a McDougalls Point pillowed and massive basalt, diabase?
Geological contact (approximate, extrapolated)- NATMAP Shield Margin Project Working Group, 1998
Shear zone margin (approximate)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 92654)
Drillhole (A.F. 92654)
107 Mineral occurrence location

Figure 107-1: Geological setting of occurrence 107.

LOCATION: 108

NAME: mineralization intersected by diamond drilling
UTM: 378860E, 6076125N
AREA: under Elbow Lake, E of McDougalls Point
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage
AIRPHOTO: MB90025-120

EXPLORATION SUMMARY

In 1971 Noranda Exploration Company, Ltd. performed HLEM (Ronka Mk. III) surveys in the area. Some of the conductive responses were subsequently drilled by Manitoba Mineral Resources, Ltd. (A.F. 91485, 92654).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 108-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by mafic phyllonite (unit W6c), consisting of homogeneous chlorite±carbonate schist. These racks are part of the Elbow Lake shear zone, which is approximately 850 m thick in this area (Syme and Whalen, 1992). Pillowed and massive, aphyric flows and synvolcanic intrusions of McDougalls Point basalt (unit F1a), and fine- to medium-grained, equigranular diabase (unit F5a) occur to the west of the shear zone.

The litholog for hole E-59 describes massive, aphyric, mafic volcanic rocks intercalated with finely laminated, schistose units interpreted as tuffaceous layers (A.F. 92654). The laminated character of the "tuffaceous" intervals is a result of deformation associated with the development of the Elbow Lake shear zone rather than a primary depositional feature.

MINERALIZATION

Several intervals containing up to 5% pyrite in graphitic schist occur between 55.0-56.7 m (180.6-186.0 ft.) and 61.9-66.8 m (203.0-219.0 ft.) in hole E-59 (A.F. 92654).

GEOCHEMICAL DATA

No assays were reported in the assessment files for this occurrence.

CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation. This occurrence has been strongly deformed along the Elbow Lake shear zone.

REFERENCES

A.F. 91487, 91485 and 92654; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Syme, E.C. and Whalen, J.B.

1992: Geology, Elbow Lake, Manitoba; Geological Survey of Canada, Preliminary 1:20 000 map, Shield-Margin Project, File ELBOW92.PS.

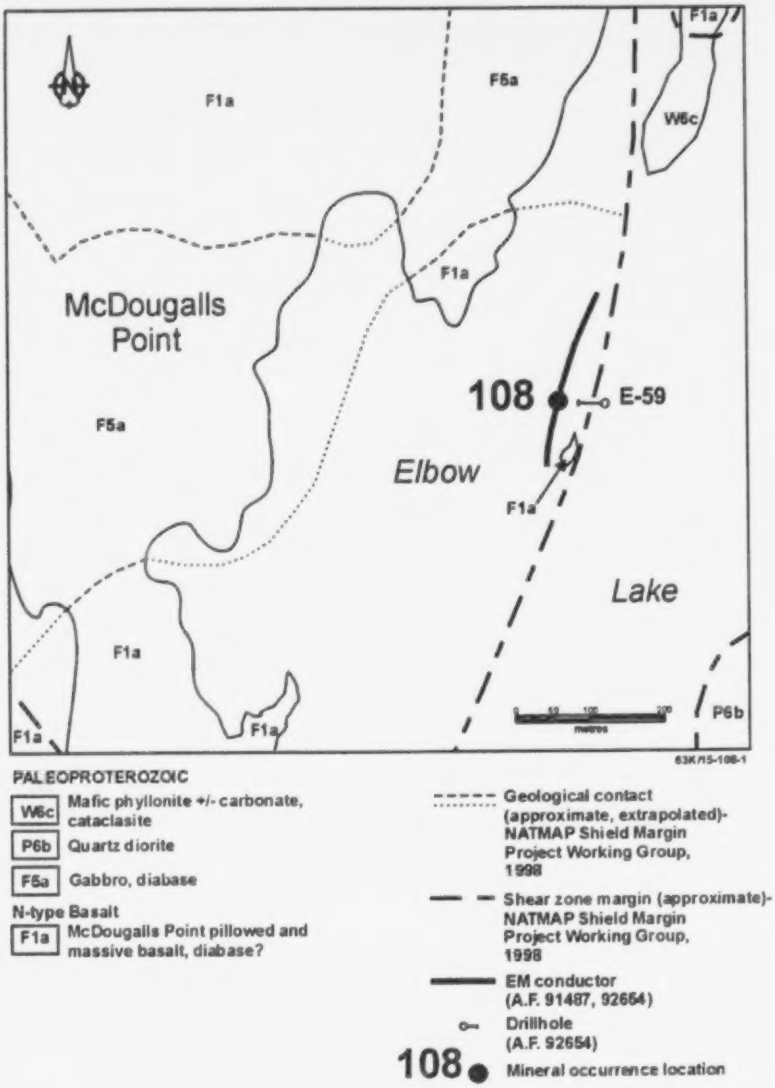

F1a
F5a
F1a
W6c
McDougalls Point
F5a
F1a
108
E-59
Elbow
F1a
Lake
F1a
F1a
F1a
0
50
100
200
metres
P6b
63K/15-108-1
PALEOPROTEROZOIC
W6c Mafic phyllonite +/- carbonate, cataclasite
P6b Quartz diorite
F5a Gabbro, diabase
N-type Basalt
F1a McDougalls Point pillowed and massive basalt, diabase?
Geological contact (approximate, extrapolated)- NATMAP Shield Margin Project Working Group, 1998
Shear zone margin (approximate)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 91487, 92654)
Drillhole (A.F. 92654)
108 Mineral occurrence location

Figure 108-1: Geological setting of occurrence 108.

LOCATION: 109

NAME: mineralization intersected by diamond drilling
UTM: 379610E, 6081115N
AREA: under Elbow Lake, between Big Poplar and Webb Islands
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage
AIRPHOTO: MB90025-117

EXPLORATION SUMMARY

In 1971 Noranda Exploration Company, Ltd. performed HLEM (Ronka Mk. III) surveys in the area. Some of the conductive responses were subsequently drilled by Manitoba Mineral Resources, Ltd. (A.F. 91487, 92654). Gränges Exploration Aktiebolag performed geophysical surveys in the area and drilled some of the responses in 1981 (A.F. 93052).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 109-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by mafic phyllonites (unit W6c) that form the Elbow Lake shear zone (Galley *et al.*, 1987, 1989; Syme, 1990, 1991, 1992), consisting of heterogeneous chlorite± carbonate±magnetite schist and phyllonite derived from heterolithologic breccia, and siliceous iron formation. Blocks of pillowed and massive aphyric McDougalls Point basalt and fine- to medium-grained gabbro to diorite, and diabase (units P2a and P2f) are common constituents within the main shear zone, which is approximately 1900 m thick in this area (Syme and Whalen, 1992).

The occurrence is located close to the western margin of the Elbow Lake shear zone. Hole ELB-4 intersected a sequence dominated by coarse-grained gabbro with lesser intervals of fine- to medium-grained "andesite" (A.F. 93052). Quartz-chlorite-carbonate schist occurs in the bottom of the hole.

MINERALIZATION

Near solid to solid pyrite with 10-15% graphite was intersected in hole ELB-4 between 76.5-82.6 m (251.1-271.1 ft.) (A.F. 93052). It is hosted by the quartz-carbonate-chlorite schist interval.

GEOCHEMICAL DATA

No assays were reported for this occurrence.

CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation. The strongly foliated character of the host unit indicates significant tectonic modification. The associated graphite suggests a biogenic contribution.

REFERENCES

A.F. 91487, 92654 and 93052; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

Galley, A.G., Ames, D.E. and Franklin, J.M.

1987: Geological setting of gold mineralization in the Elbow Lake region, Manitoba; in Manitoba Energy and Mines, Minerals Division, Report of Field Activities, 1987, pp.175-177.

1989: Results of studies on the gold metallogeny of the Flin Flon belt; in Investigations by the Geological Survey of Canada in Manitoba and Saskatchewan during the 1984-1989 Mineral Development Agreements, Geological Survey of Canada, Open File 2133, pp.25-32.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Syme, E.C.

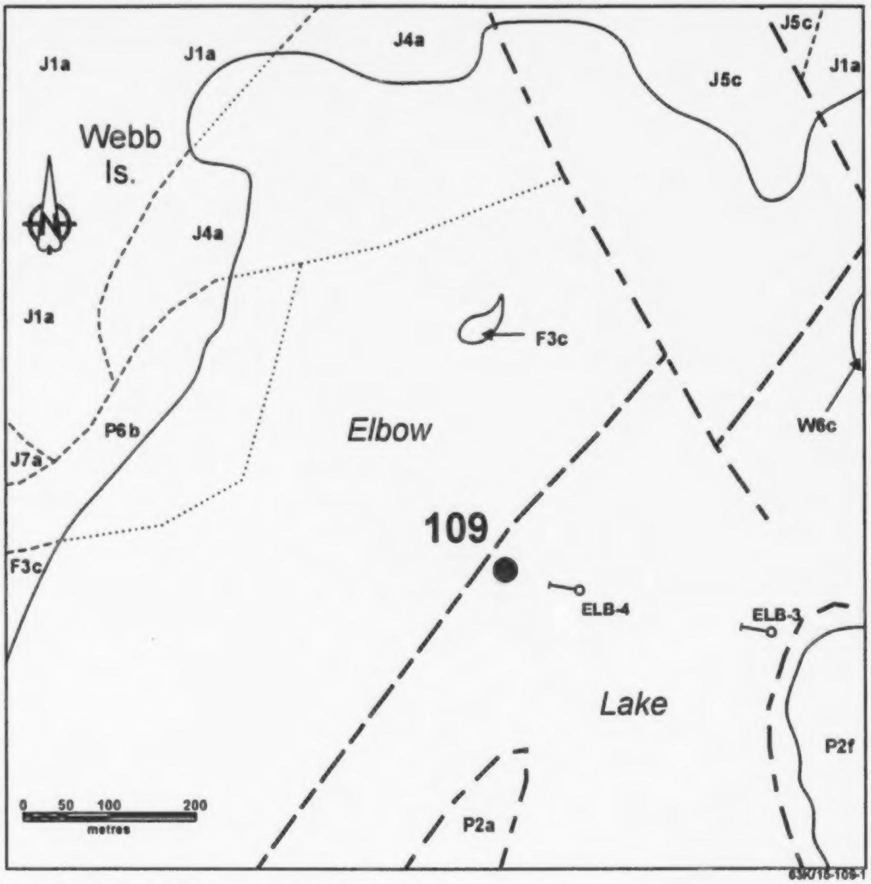
1990: Elbow Lake project (part of NTS 63K/15W); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1990, pp.49-57.

1991: Elbow Lake project - Part A: supracrustal rocks and structural setting; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1991, pp.14-27.

1992: Elbow Lake Project - Part A: Supracrustal rocks; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1992, pp.32-46.

Syme, E.C. and Whalen, J.B.

1992: Geology, Elbow Lake, Manitoba; Geological Survey of Canada, Preliminary 1:20 000 map, Shield-Margin Project, File ELBOW92.PS.


J1a
J1a
J4a
J5c
J1a
J5c
Webb Is.
J4a
J1a
F3c
Elbow
W6c
P6b
J7a
109
F3c
ELB-4
ELB-3
Lake
P2f
0 50 100 200
metres
P2a
63K/16-109-1

PALEOPROTEROZOIC

W6c	Mafic phyllonite +/- carbonate, cataclasite
P6b	Quartz diorite
P2a	Gabbro, diorite
P2f	Diabase, diabase dyke complex
J7a	Felsic tuff, lapilli tuff, breccia, heterolithologic breccia
J5c	Heterolithologic breccia, dominantly mafic fragments
J4a	Rhyolite to dacite flows, flow breccia
J1a	Tholeiitic basalt, basaltic andesite; gabbro, derived amphibolite

Plume-related Basalt

F3c	Long Bay ocean-island basalt conglomerate, sandstone

------	Geological contact (approximate, extrapolated)- NATMAP Shield Margin Project Working Group, 1998
— —	Fault (approximate)- NATMAP Shield Margin Project Working Group, 1998
o-	Drillhole (A.F. 93052)
109●	Mineral occurrence location

Figure 109-1: Geological setting of occurrence 109.

LOCATION: 110

NAME: mineralization intersected by diamond drilling
UTM: 380160E, 6078085N
AREA: under Elbow Lake between Smith and Chinaman Islands
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage
AIRPHOTO: MB90025-118

EXPLORATION SUMMARY

In 1971 Noranda Exploration Company, Ltd. performed HLEM (Ronka Mk. III) surveys in the area. Some of the conductive responses were subsequently drilled by Manitoba Mineral Resources, Ltd. (A.F. 91487, 92654).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 110-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by mafic phyllonites (unit W6c) that form the Elbow Lake shear zone (Galley *et al.*, 1987, 1989; Syme, 1990, 1991, 1992). These consist of heterogeneous chlorite±carbonate schist, that sometimes show relict, strongly flattened pillows. Blocks of pillowed and massive aphyric McDougalls Point basalt (unit F1a) and Claw Bay pillowed and massive basalt (unit F1b) are common within and adjacent to the main shear zone. The shear zone is approximately 1500 m thick in this area (Syme and Whalen, 1992).

The sequence intersected in hole E-45 is dominated by fine- to coarse-grained, foliated "andesite" (A.F. 92654).

MINERALIZATION

An interval containing 15% pyrite along foliation planes within a black, fine-grained, laminated graphitic unit was intersected in hole E-45 between 50.6-54.6 m (166.0-179.0 ft.) (A.F. 92654).

GEOCHEMICAL DATA

No assays were reported for the mineralized interval intersected by this hole.

CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation. The strongly foliated character of the host unit indicates significant tectonic modification. The associated graphite suggests a significant biogenic contribution.

REFERENCES

A.F. 91487 and 92654; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

Galley, A.G., Ames, D.E. and Franklin, J.M.

1987: Geological setting of gold mineralization in the Elbow Lake region, Manitoba; in Manitoba Energy and Mines, Minerals Division, Report of Field Activities, 1987, pp.175-177.

1989: Results of studies on the gold metallogeny of the Flin Flon belt; in Investigations by the Geological Survey of Canada in Manitoba and Saskatchewan during the 1984-1989 Mineral Development Agreements, Geological Survey of Canada, Open File 2133, pp.25-32.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Syme, E.C.

1990: Elbow Lake project (part of NTS 63K/15W); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1990, pp.49-57.

1991: Elbow Lake project - Part A: supracrustal rocks and structural setting; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1991, pp.14-27.

1992: Elbow Lake Project - Part A: Supracrustal rocks; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1992, pp.32-46.

Syme, E.C. and Whalen, J.B.

1992: Geology, Elbow Lake, Manitoba; Geological Survey of Canada, Preliminary 1:20 000 map, Shield-Margin Project, File ELBOW92.PS.

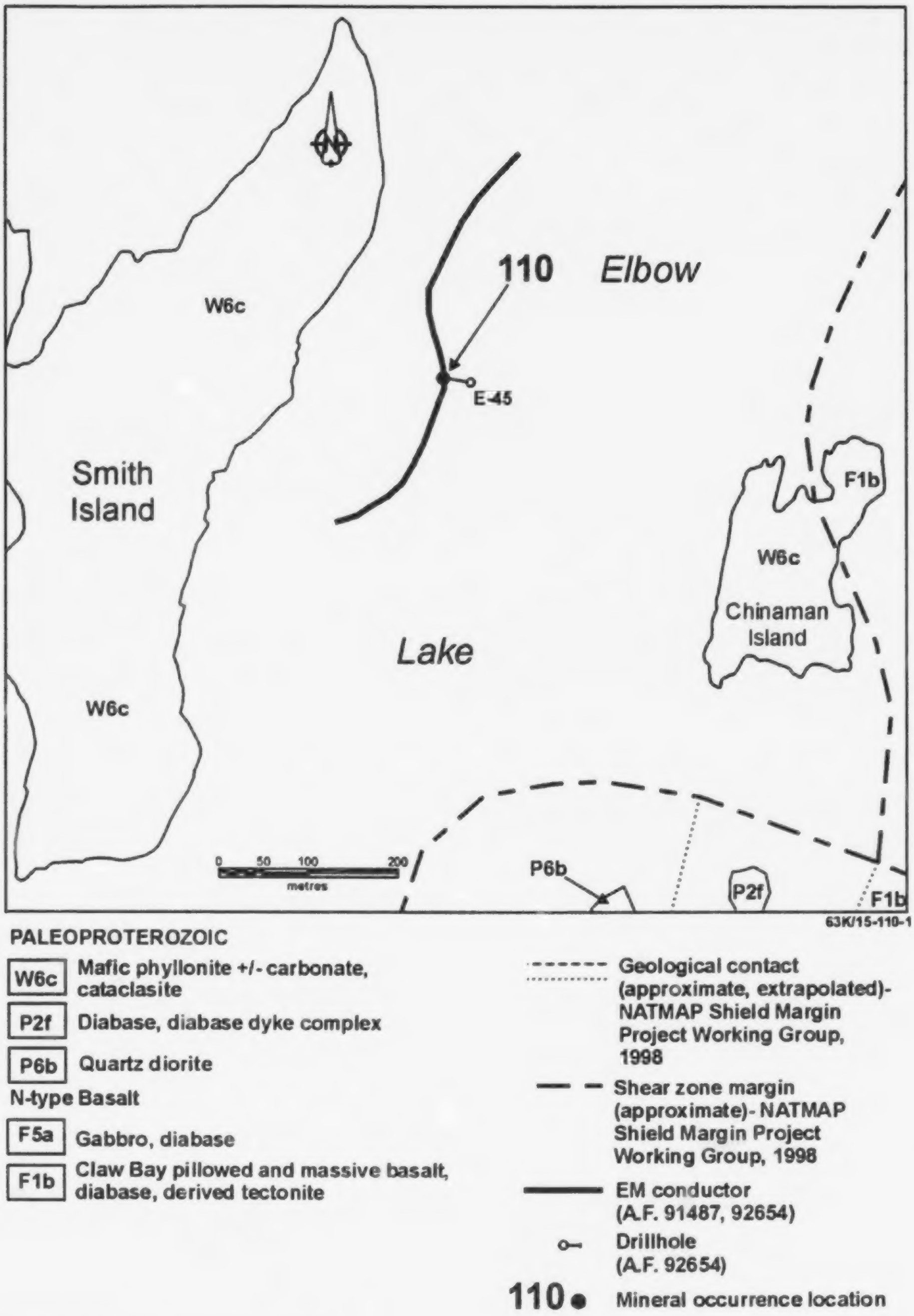

110
Elbow
W6c
E-45
Smith Island
W6c
Lake
F1b
W6c
Chinaman Island
0 50 100 200
metres
P6b
P2f
F1b
63K/15-110-1
PALEOPROTEROZOIC
W6c Mafic phyllonite +/- carbonate, cataclasite
P2f Diabase, diabase dyke complex
P6b Quartz diorite
N-type Basalt
F5a Gabbro, diabase
F1b Claw Bay pillowed and massive basalt, diabase, derived tectonite
Geological contact (approximate, extrapolated)- NATMAP Shield Margin Project Working Group, 1998
Shear zone margin (approximate)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 91487, 92654)
Drillhole (A.F. 92654)
110 ● Mineral occurrence location

Figure 110-1: Geological setting of occurrence 110.

LOCATION: 111

NAME: mineralization intersected by diamond drilling
UTM: 382610E, 6079185N
AREA: along E side of Elbow Lake, ESE of Hanna Islands
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage
AIRPHOTO: MB90025-52

EXPLORATION SUMMARY

In 1969 a ground HLEM (Ronka) and magnetometer survey was performed over the area for Guggenheim Exploration Company, Inc. (A.F. 92261). Several of the conductors were subsequently drill tested (A.F. 92260). In 1974 Gränges Exploration AB performed an HLEM survey over the occurrence (A.F. 91506, 91580).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 111-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by pillowed and massive aphyric flows of the Claw Bay basalt (unit F1b). Pillows within this unit are sometimes strongly flattened as part of the Centre Lake mafic tectonite (unit W6c). Mafic phyllonites consisting of homogeneous chlorite±carbonate schist, tectonically laminated phyllonite, and phyllonite derived from diabase and gabbro are exposed to the west. These are part of the Centre Lake mafic tectonite and the Claw Bay shear zone (Syme, 1991, 1992). Fine- to medium-grained, equigranular to sparsely plagioclase megacrystic diabase (unit F5a) occurs to the NE.

Hole #1 intersected a sequence of foliated dark green to light grey and green, fine- to medium-grained "andesite" (A.F. 92260).

MINERALIZATION

Hole #1 intersected sulphide mineralization over the following intervals (A.F. 92260) (see table below).

Hole No.	Interval	Mineralization
#1	17.8-18.6 m (58.5-61.0 ft.)	to 15% pyrite in siliceous interval in fine-grained chloritic "andesite"
	35.1-36.9 m (115.0-121.0 ft.)	15% pyrite, minor chalcopyrite, numerous quartz stringers in green-grey, medium-grained, amphibole-phyric, chloritic "andesite"
	77.4-78.0 m (254.0-256.0 ft.)	to 15% pyrite, lesser pyrrhotite, minor chalcopyrite, in green-grey, medium grained, amphibole-phyric, chloritic "andesite"
	82.4-86.4 m (270.5-283.5 ft.)	to 20% pyrite and pyrrhotite, some earthy pyrite, in green-grey, medium grained, amphibole-phyric, chloritic "andesite"

GEOCHEMICAL DATA

The following assays were obtained from mineralized intervals (A.F. 92260) (see table below).

Hole No.	Interval	%Cu	%Zn	g Au/t (oz. Au/ton)	g Ag/t (oz. Au/ton)
#1	17.8-18.6 m (58.5-61.0 ft.)		—	nil	2.05 (0.06)
	35.1-36.9 m (115.0-121.0 ft.)	0.14		nil	tr
	77.4-78.0 m (254.0-256.0 ft.)	0.14		nil	tr
	82.4-83.4 m (270.5-273.5 ft.)	0.05	nil	nil	tr
	83.4-85.5 m (273.5-280.5 ft.)	tr	nil	nil	3.42 (0.10)
	85.5-86.4 m (280.5-283.5 ft.)	0.06	nil	nil	9.59 (0.28)
	129.5-132.0 m (425.0-433.0 ft.)	0.12		nil	nil

CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation.

REFERENCES

A.F. 91506, 91580, 92260, 92261 and 92262; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Energy and Minerals Division

NATMAP Shield Margin Project Working Group
1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Syme, E.C.

1991: Elbow Lake project - Part A: supracrustal rocks and structural setting; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1991, pp.14-27. 1992: Elbow Lake Project - Part A: Supracrustal rocks; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1992, pp.32-46.

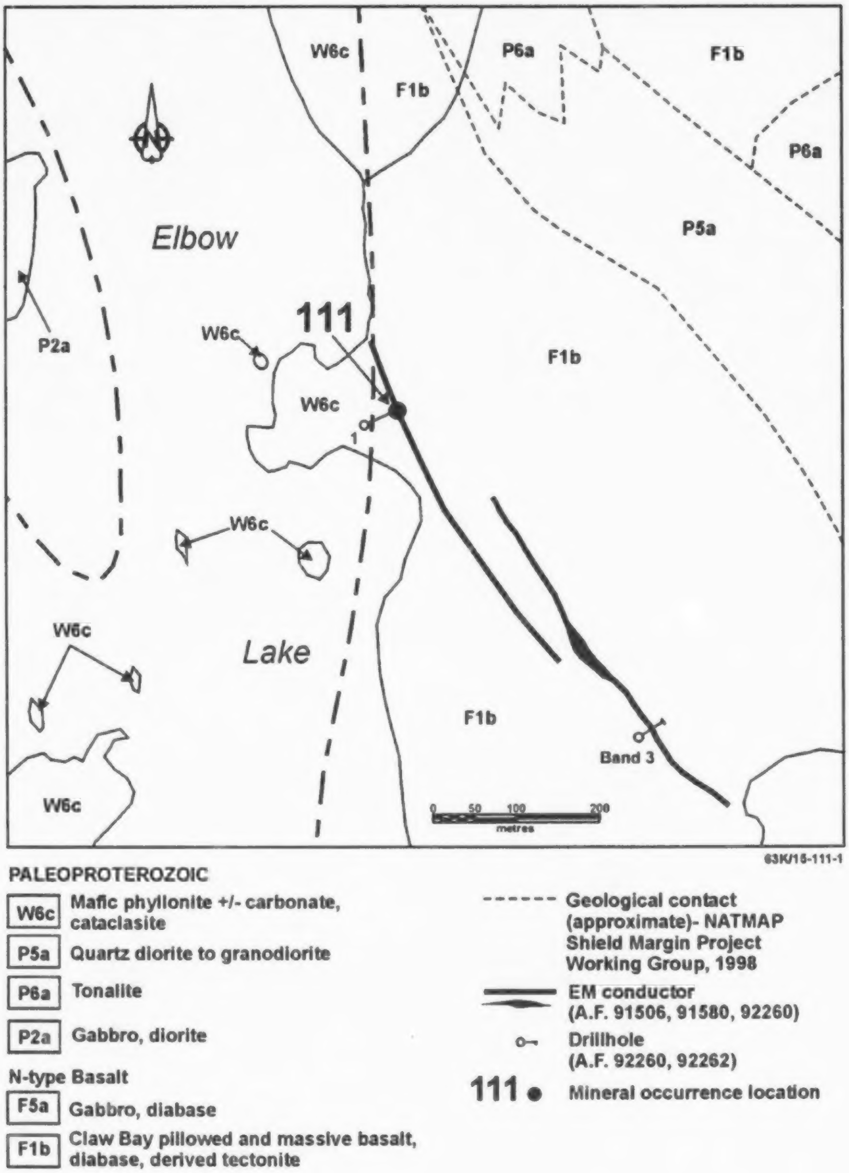

W6c
F1b
P6a
F1b
P6a
P5a
Elbow
111
W6c
P2a
F1b
W6c
1
W6c
W6c
Lake
F1b
Band 3
W6c
0 50 100 200
metres
63K/15-111-1
PALEOPROTEROZOIC
W6c Mafic phyllonite +/- carbonate, cataclasite
P5a Quartz diorite to granodiorite
P6a Tonalite
P2a Gabbro, diorite
N-type Basalt
F5a Gabbro, diabase
F1b Claw Bay pillowed and massive basalt, diabase, derived tectonite
Geological contact (approximate)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 91506, 91580, 92260)
Drillhole (A.F. 92260, 92262)
111 Mineral occurrence location

Figure 111-1: Geological setting of occurrence 111.

LOCATION: 112

NAME: mineralization intersected by diamond drilling
UTM: 382930E, 6078815N
AREA: along E side of Elbow Lake, ESE of Hanna Islands
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage, then traverse
AIRPHOTO: MB90025-52

EXPLORATION SUMMARY

In 1969 a ground HLEM (Ronka) and magnetometer survey was performed over the area for Guggenheim Exploration Company, Inc. (A.F. 92261). Several of the conductors were subsequently drill tested (A.F. 92260). In 1974 Gränges Exploration AB performed an HLEM survey over the area. In 1976 several of the conductive responses were drilled (A.F. 92262).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 112-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by pillowed and massive aphyric flows of the Claw Bay basalt (unit F1b). Pillows within this unit are sometimes strongly flattened as part of the Centre Lake mafic tectonite. Mafic phyllonites consisting of homogeneous chlorite±carbonate schist, tectonically laminated phyllonite, and phyllonite derived from diabase and gabbro (units W6c) are exposed to the west, and comprise part of the Centre Lake mafic tectonite and the Claw Bay shear zone (Syme, 1991, 1992) Fine- to medium-grained, equigranular to sparsely plagioclase megacrystic diabase (unit F5a) occurs to the NE.

The sequence intersected in hole BAND-3 consists of grey-green chlorite-biotite schist and moderately foliated, amphibole-phyric "andesite" (A.F. 92262).

MINERALIZATION

The lower part of the chlorite-biotite schist interval, from 19.0-19.8 m (62.3-65.1 ft.), contains up to 70% pyrite with a trace of chalcopyrite (A.F. 92262).

GEOCHEMICAL DATA

An assay of the mineralized interval returned low metal values: 0.02% Cu, 0.03% Zn, 0.01% Ni (A.F. 92262).

CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation. The strongly foliated character of the host unit indicates significant tectonic modification.

REFERENCES

A.F. 92260, 92261 and 92262; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Syme, E.C.

1991: Elbow Lake project - Part A: supracrustal rocks and structural setting; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1991, pp.14-27.

1992: Elbow Lake Project - Part A: Supracrustal rocks; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1992, pp.32-46.

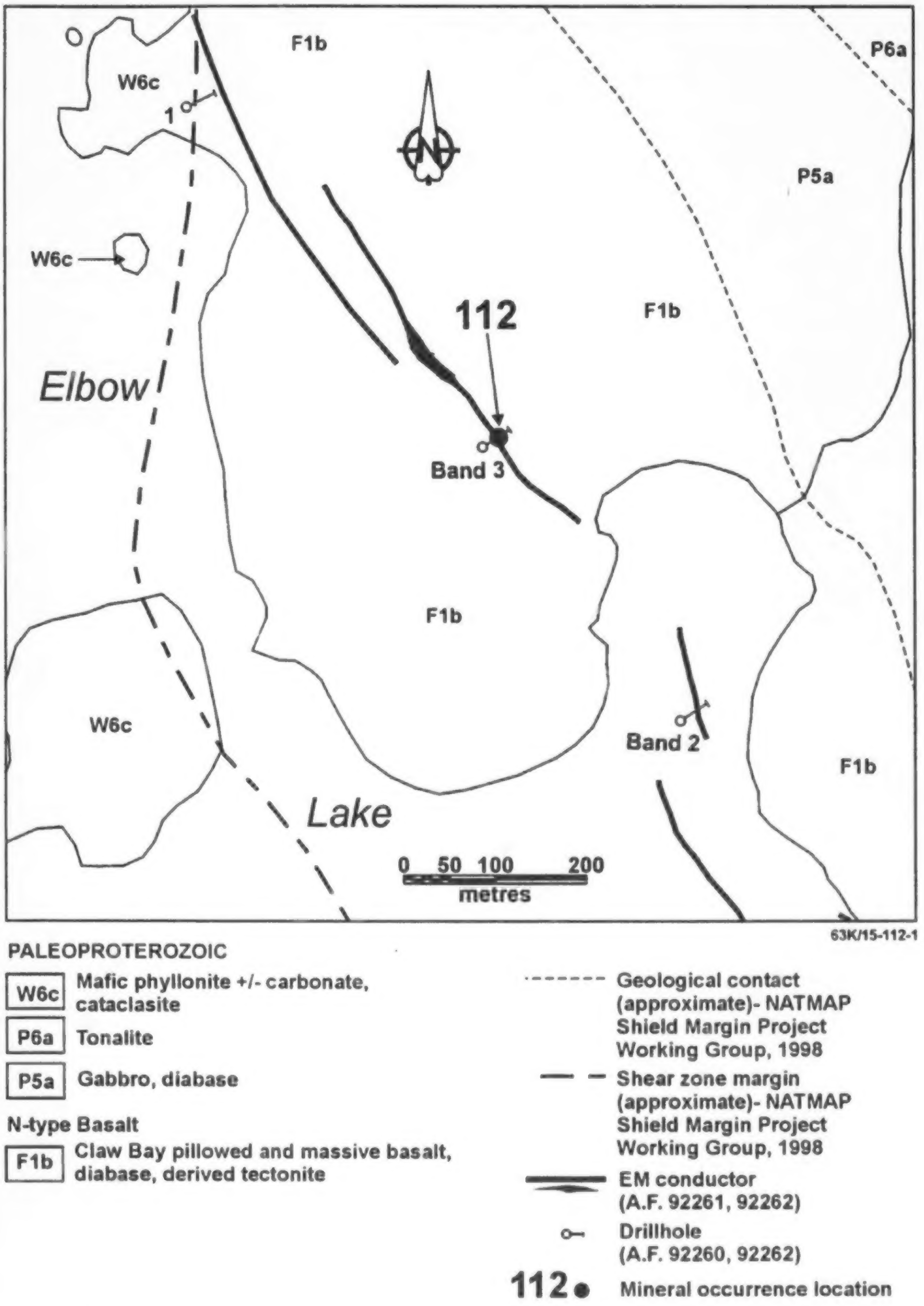

F1b
P6a
W6c
1
P5a
W6c
112
F1b
Elbow
Band 3
F1b
W6c
Band 2
F1b
Lake
0 50 100 200
metres
63K/15-112-1
PALEOPROTEROZOIC
W6c Mafic phyllonite +/- carbonate, cataclasite
P6a Tonalite
P5a Gabbro, diabase
N-type Basalt
F1b Claw Bay pillowed and massive basalt, diabase, derived tectonite
Geological contact (approximate)- NATMAP Shield Margin Project Working Group, 1998
Shear zone margin (approximate)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 92261, 92262)
Drillhole (A.F. 92260, 92262)
112 Mineral occurrence location

Figure 112-1: Geological setting of occurrence 112.

LOCATION: 113

NAME: mineralization intersected by diamond drilling
UTM: 383070E, 6078515N
AREA: under N side of Claw Bay, east side of Elbow Lake
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage
AIRPHOTO: MB90025-33

EXPLORATION SUMMARY

In 1969 a ground HLEM (Ronka) and magnetometer survey was performed over the area for Guggenheim Exploration Company, Inc. (A.F. 92261). Several of the conductors were subsequently drill tested (A.F. 92260). In 1974 Gränges Exploration AB performed an HLEM survey over the area. In 1976 several of the conductive responses were drilled (A.F. 92262).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 113-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by pillowed and massive aphyric flows of the Claw Bay basalt (unit F1b). Pillows within this unit are sometimes strongly flattened as part of the Centre Lake mafic tectonite (unit 2a). Mafic phyllonites consisting of homogeneous chlorite±carbonate schist, tectonically laminated phyllonite, and phyllonite derived from diabase and gabbro (unit W6c) are exposed to the west, and comprise part of the Centre Lake mafic tectonite and the Claw Bay shear zone (Syme, 1991, 1992) Fine- to medium-grained, equigranular to sparsely plagioclase megacrystic diabase (units F5a) occurs to the NE.

Hole BAND-2 intersected a sequence consisting of moderately- to strongly-foliated, chloritic "andesite", some of which is amphibole phyric, and quartz-chlorite-magnetite schist (A.F. 92262).

MINERALIZATION

Five to 20% pyrite and 5-30% magnetite occur from 31.2-36.3 m (102.2-119.0 ft.) in hole BAND-2 (A.F. 92262). Minor chalcopyrite is also present. The host rock is quartz-chlorite-magnetite schist.

GEOCHEMICAL DATA

Assays of the mineralized interval in hole BAND-2 returned low metal values: 0.02-0.03% Cu, 0.02-0.03% Zn, 0.01% Ni (A.F. 92262).

CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation.

REFERENCES

A.F. 92260, 92261 and 92262; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Syme, E.C.

1991: Elbow Lake project - Part A: supracrustal rocks and structural setting; in Manitoba Energy and Mines,Minerals Division, Report of Activities, 1991, pp.14-27.

1992: Elbow Lake Project - Part A: Supracrustal rocks; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1992, pp.32-46.

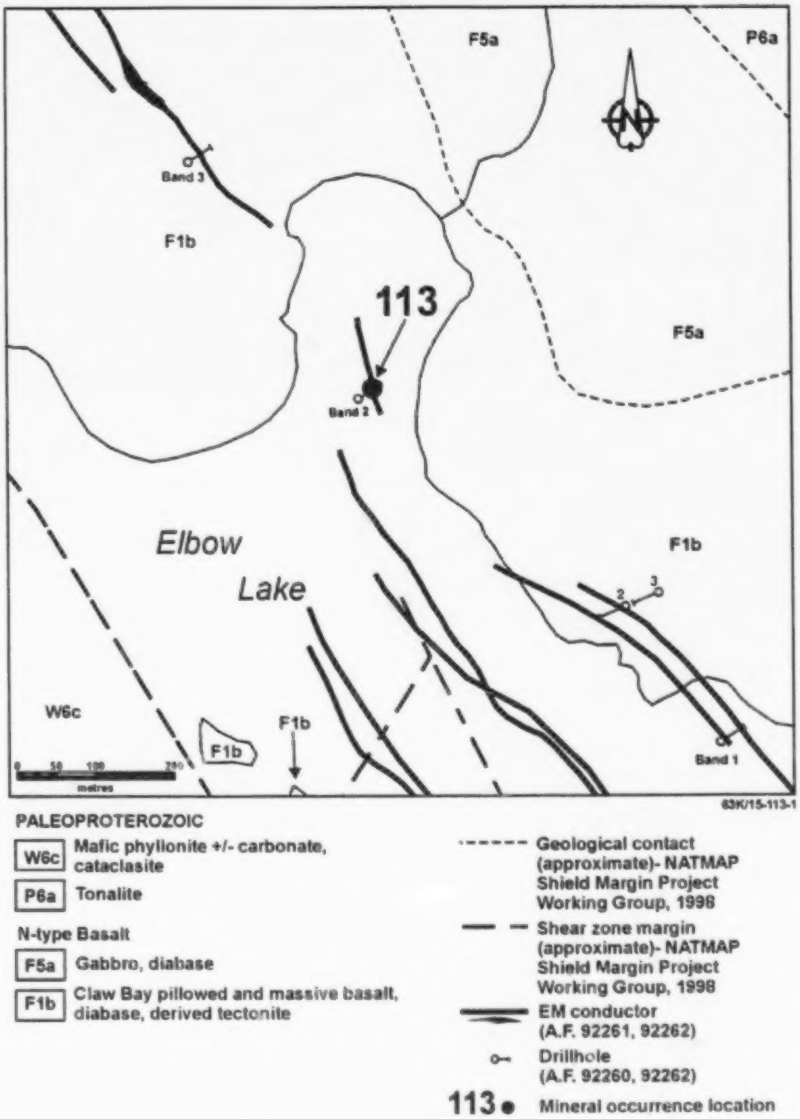

F5a
P6a
Band 3
F1b
113
F5a
Band 2
Elbow
Lake
F1b
2
3
W6c
F1b
F1b
Band 1
0
50
100
200
metres
63K/15-113-1
PALEOPROTEROZOIC
W6c
Mafic phyllonite +/- carbonate, cataclasite
P6a
Tonalite
N-type Basalt
F5a
Gabbro, diabase
F1b
Claw Bay pillowed and massive basalt, diabase, derived tectonite
Geological contact (approximate)- NATMAP Shield Margin Project Working Group, 1998
Shear zone margin (approximate)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 92261, 92262)
Drillhole (A.F. 92260, 92262)
113
Mineral occurrence location

Figure 113-1: Geological setting of occurrence 113.

LOCATION: 114

NAME: mineralization intersected by diamond drilling
UTM: 383530E, 6078155N
AREA: under N side of Claw Bay, east side of Elbow Lake
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage
AIRPHOTO: MB90025-33

EXPLORATION SUMMARY

In 1969 a ground HLEM (Ronka) and magnetometer survey was performed over the area for Guggenheim Exploration Company, Inc. (A.F. 92261). Several of the conductors were subsequently drill tested (A.F. 92260). In 1972 three holes were drilled to test several conductive responses in the occurrence area (A.F. 92252). In 1974 Gränges Exploration AB performed an HLEM survey over the area. In 1976 several of the conductive responses were drilled (A.F. 92262).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 114-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by pillowed and massive aphyric flows of the Claw Bay basalt (unit F1b). Pillows within this unit are sometimes strongly flattened as part of the Centre Lake mafic tectonite. Mafic phyllonites consisting of homogeneous chlorite±carbonate schist, tectonically laminated phyllonite, and phyllonite derived from diabase and gabbro (unit W6c) are exposed to the west, and comprise part of the Centre Lake mafic tectonite and the Claw Bay shear zone (Syme, 1991, 1992). Fine- to medium-grained, equigranular to sparsely plagioclase megacrystic diabase (unit F5a) occurs to the NE.

All the drill holes that have delineated this occurrence intersected mafic, foliated, generally amphibole phyric volcanic rocks ("andesite") and schistose equivalents (A.F. 92260, 92262). The schistose intervals probably represent sheared intervals related to the Claw Bay shear zone.

MINERALIZATION

Sulphide mineralization was intersected at this occurrence in the following drill holes (A.F. 92252, 92260, 92262) (see table below).

Hole No.	Interval	Mineralization
#2	63.1-64.3 m (207.0-211.0 ft.)	to 15% pyrite as stringers, minor sphalerite, chalcopyrite, in quartz-hornblende-biotite schist and "andesite"
	104.2-105.9 m (342.0-347.3 ft.)	15% to "heavy" pyrite, pyrrhotite, minor chalcopyrite, in schistose "andesite"
#3	182.9-183.9 m (600.0-603.5 ft.)	intervals of massive pyrrhotite with chalcopyrite in light green, fine-grained "andesite"
PO-2	21.1-22.0 m (69.1-72.1 ft.)	pyrite stringers with minor chalcopyrite in "andesite" with schistose intervals
	90.8-92.8 m (297.8-304.5 ft.)	"slight" to "fair" pyrite and pyrrhotite, minor chalcopyrite, in "andesite" and schistose equivalent
PO-3	101.2-102.4 m (332.1-336.0 ft.)	"heavy to massive" magnetite, finely disseminated pyrrhotite, minor chalcopyrite, in "andesite"
BAND-1	30.2-32.8 m (99.0-107.6 ft.)	3-80% pyrite, 10% chalcopyrite 32.6-32.7 m (106.9-107.4 ft.), some intervals have up to 5% magnetite,

GEOCHEMICAL DATA

The following assays were obtained from mineralized intervals sampled (A.F. 92252, 92260, 92262) (see table on next page).

CLASSIFICATION

Stratabound massive sulphide type deposit; volcanic rock associated.

REFERENCES

A.F. 92252, 92260, 92261 and 92262; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Syme, E.C.

1991: Elbow Lake project - Part A: supracrustal rocks and structural setting; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1991, pp.14-27.

1992: Elbow Lake Project - Part A: Supracrustal rocks; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1992, pp.32-46.

Hole No.	Interval	%Cu	%Zn	%Ni	%Pb	g Au/t (oz. Au/ton)	g Ag/t (oz. Ag/ton)
#2	4.3-6.1 m (14.0-20.0 ft.)	0.04	nil			tr	4.11 (0.12)
	6.1-7.6 m (20.0-25.0 ft.)	0.03	0.40			tr	2.74 (0.08)
	7.6-9.1 m (25.0-30.0 ft.)	0.06	nil			tr	nil
	9.1-10.7 m (30.0-35.0 ft.)	0.08	nil			tr	4.11 (0.12)
	51.2-51.7 m (168.0-169.5 ft.)	0.10	0.40			nil	4.79 (0.14)
	56.7-57.9 m (186.0-190.0 ft.)	0.09	nil			nil	2.74 (0.08)
	59.1-60.7 m (194.0-199.0 ft.)	0.08	nil			tr	4.11 (0.12)
	104.2-104.9 m (342.0-344.0 ft.)	0.18	nil			nil	4.11 (0.12)
	104.9-105.5 m (344.0-346.0 ft.)	2.15	nil			nil	4.11 (0.12)
	105.5-106.1 m (346.0-348.0 ft.)	3.23	nil			tr	7.53 (0.22)
	106.1-106.4 m (348.0-349.0 ft.)	0.28	nil			tr	tr
	106.4-107.9 m (349.0-354.0 ft.)	0.03	nil			nil	6.16 (0.18)
	107.9-109.4 m (354.0-359.0 ft.)	tr	0.40			tr	6.8 (0.20)
	109.4-110.9 m (359.0-364.0 ft.)	tr	nil			nil	nil
#3	135.0-136.6 m (443.0-448.0 ft.)	0.06	0.30			nil	tr
	136.6-137.8 m (448.0-452.0 ft.)	0.18	nil			0.34 (0.01)	nil
	182.3-182.9 m (598.0-600.0 ft.)	tr	nil			nil	tr
	182.9-183.9 m (600.0-603.5 ft.)	1.38	nil			0.68 (0.02)	tr
	183.9-185.3 m (603.5-608.0 ft.)	0.09	nil			tr	tr
	183.5-186.8 m (608.0-613.0 ft.)	tr	nil			0.34 (0.01)	nil
PO-2	7.6-9.0 m (25.0-29.4 ft.)	0.19	0.02				
	12.9-13.9 m (42.2-45.5 ft.)		tr				
	21.0-22.3 m (69.0-73.0 ft.)	0.08					
	82.6-84.2 m (271.1-276.1 ft.)	0.35	0.02				
	90.8-92.8 m (297.8-304.5 ft.)	0.14	0.05	tr			
	93.2-94.2 m (305.8-309.0 ft.)	0.08	0.06				
PO-3	72.0-72.5 m (236.2-238.0 ft.)	0.50					
	96.7-97.8 m (317.4-321.0 ft.)	0.02		tr			
	100.3-102.4 m (329.0-336.0 ft.)	0.34	0.05	tr			
BAND-1	13.7-15.2 m (45.0-50.0 ft.)				0.02	0.03 (0.001)	0.34 (0.01)
	30.2-31.5 m (99.0-103.3 ft.)		0.03	0.03			
	31.5-32.6 m (103.3-106.9 ft.)		0.12	0.15			
	32.6-32.9 m (106.9-107.9 ft.)		1.83	0.05	0.01		
	32.9-33.2 m (107.9-109.0 ft.)		0.23	0.32			

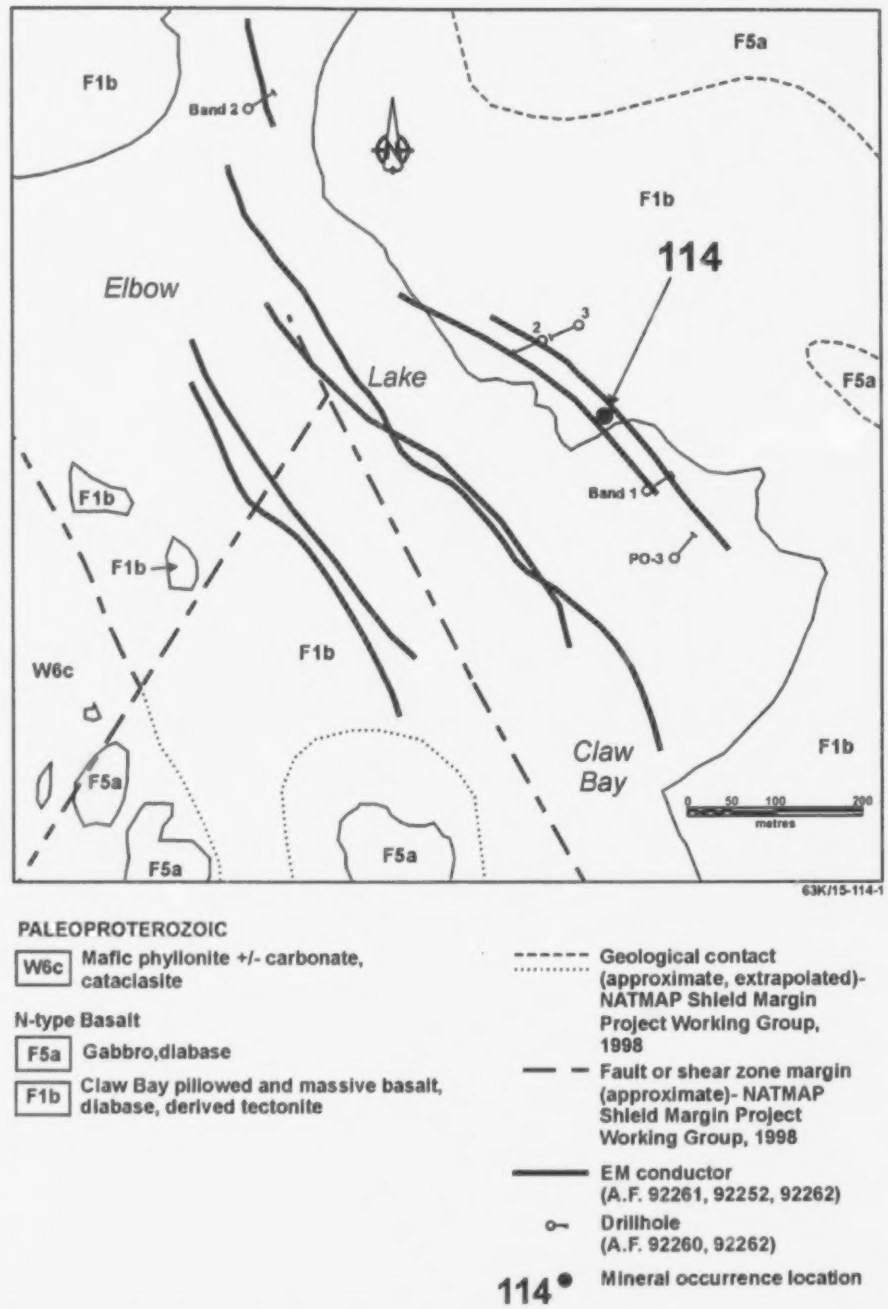

F1b
Band 2
F5a
F1b
114
Elbow
Lake
2
3
F5a
Band 1
PO-3
F1b
F1b
F1b
W6c
F1b
F5a
F5a
F5a
Claw Bay
F1b
0 50 100 200
metres
63K/15-114-1
PALEOPROTEROZOIC
W6c Mafic phyllonite +/- carbonate, cataclasite
N-type Basalt
F5a Gabbro,diabase
F1b Claw Bay pillowed and massive basalt, diabase, derived tectonite
Geological contact (approximate, extrapolated)- NATMAP Shield Margin Project Working Group, 1998
Fault or shear zone margin (approximate)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 92261, 92252, 92262)
Drillhole (A.F. 92260, 92262)
114 ● Mineral occurrence location

Figure 114-1: Geological setting of occurrence 114.

LOCATION: 115

NAME: mineralization intersected by diamond drilling
UTM: 384350E, 6078775N
AREA: approximately 800 m NNW of Centre Lake
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage, then traverse
AIRPHOTO: MB90025-33

EXPLORATION SUMMARY

In 1955 and 1957 Prospectors Airways Company, Ltd. drilled several holes in the area (A.F. 90504). The drill target is not specified in the assessment file.

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 115-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by fine- to medium-grained, equigranular diabase (unit F5a) and equigranular to weakly quartz megacrystic tonalite (unit P6a) related to the East Elbow tonalite stock. Strongly flattened, pillowed, mafic flows intruded by diabase dykes (unit F1b) that host the Centre Lake mafic tectonite occur to the SE of the occurrence.

The sequence intersected in hole M-8 is dominated by amphibole-phyric "andesite" with a minor "gabbroic" unit at the top of the hole (A.F. 90504).

MINERALIZATION

Sulphide mineralization is widely distributed in hole M-8, and most of the mafic volcanic rock contains disseminated pyrrhotite (A.F. 90504). Chalcopyrite is a rare constituent. The best mineralization, consisting of "disseminated pyrrhotite" with "minor chalcopyrite" occurs between 61.1-64.6 m (200.5-212.0 ft.) in "slightly altered andesite".

GEOCHEMICAL DATA

The following assays were obtained from the main mineralized interval (A.F. 90504) (see table below).

Hole No.	Interval	%Cu	%Zn	g Au/t (oz. Au/ton)
M-8	61.1-62.0 m (200.5-203.5 ft.)	0.17	0.05	0.34 (0.01)
	62.0-63.6 m (203.5-208.5 ft.)	0.16	0.05	0.17 (0.005)
	64.0-64.6 m (210.0-212.0 ft.)	0.54	0.10	0.34 (0.01)

CLASSIFICATION

Disseminated mineralization - not classified. It may represent a sulphide-bearing alteration zone associated with a stratabound massive sulphide deposit.

REFERENCES

A.F. 90504; Cancelled Assessment File, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

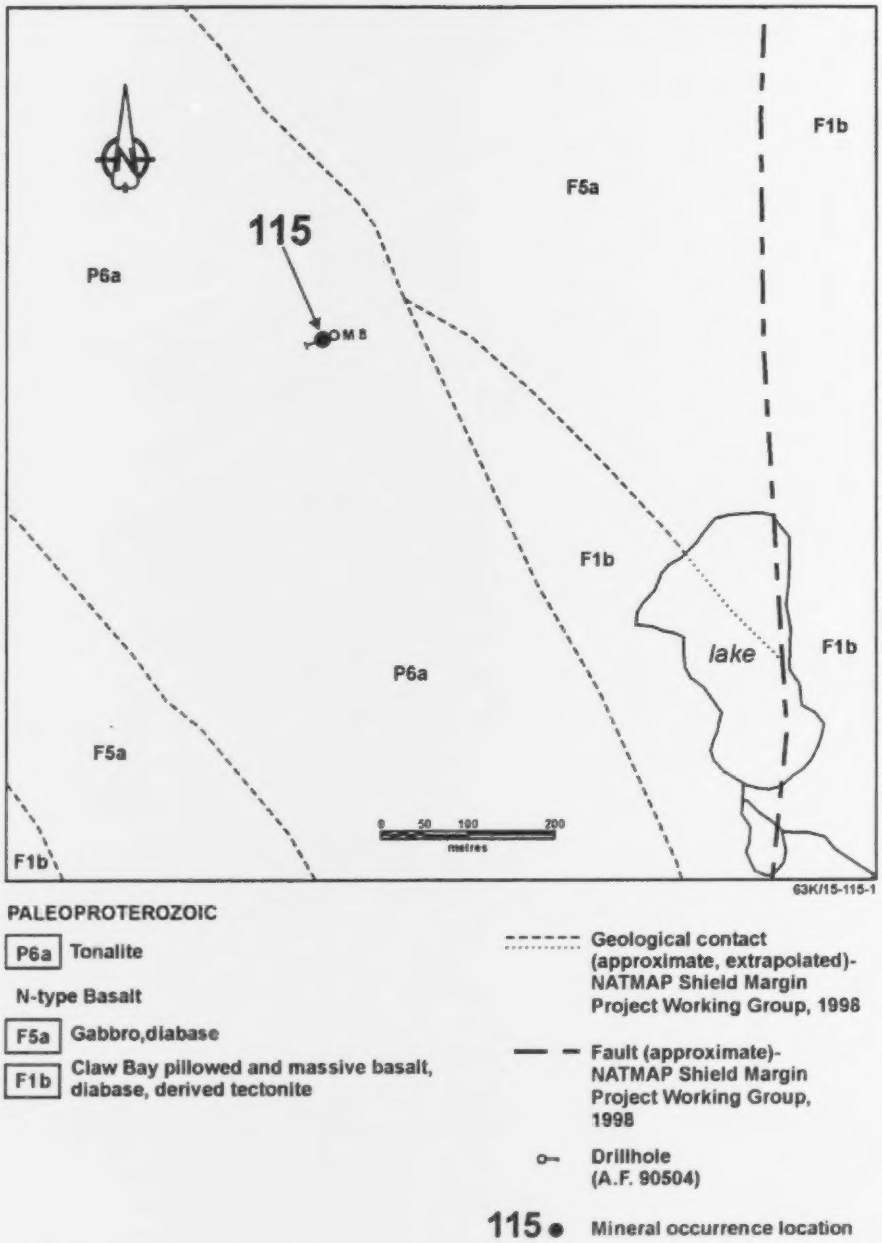

115
P6a
F5a
F1b
lake
OMB
0 50 100 200
metres
63K/15-115-1
PALEOPROTEROZOIC
P6a Tonalite
N-type Basalt
F5a Gabbro,diabase
F1b Claw Bay pillowed and massive basalt, diabase, derived tectonite
Geological contact (approximate, extrapolated)-NATMAP Shield Margin Project Working Group, 1998
Fault (approximate)-NATMAP Shield Margin Project Working Group, 1998
Drillhole (A.F. 90504)
115 ● Mineral occurrence location

Figure 115-1: Geological setting of occurrence 115.

LOCATION: 116

NAME: mineralization intersected by diamond drilling
UTM: 374760E, 6076015N
AREA: under south end of Sulphide Lake
ACCESS: via bush aircraft to Sulphide Lake
AIRPHOTO: MB90025-203

EXPLORATION SUMMARY

In 1971 Noranda Exploration Company, Ltd. performed HLEM (Ronka Mk. III) surveys in the area. Some of the conductive responses were subsequently drilled by Manitoba Mineral Resources, Ltd. (A.F. 91487, 92654).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 1-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by undifferentiated basalt and basaltic andesite (unit F1a), possibly related to the McDougalls Point basalt, beige to grey, foliated, medium-grained, equigranular, hornblende-biotite quartz diorite to granodiorite (unit P6b) and medium pink, foliated, medium-grained, porphyritic, hornblende-biotite granodiorite (units P7a and P9b) of the Big Rat Lake pluton.

Hole E-62 intersected a sequence of interlayered rhyolite, andesite and dark grey, finely laminated "tuff" (A.F. 92654). It is unclear if the layered character of the "tuffaceous" intervals is a primary depositional feature or has been tectonically induced.

MINERALIZATION

Several finely laminated, pyrrhotite-rich intervals were intersected in hole E-62, as follows (A.F. 92654) (see table below).

Hole No.	Interval	Mineralization
E-62	22.4-34.0 m (73.6-111.5 ft.)	2-50% pyrrhotite, 2-5% pyrite, minor chalcopyrite in "tuffaceous" unit
	35.1-36.0 m (115.0-118.0 ft.)	15% pyrrhotite, 2% pyrite in dark grey, finely laminated "tuff"
	38.7-40.7 m (126.9-133.6 ft.)	50% pyrrhotite, minor pyrite, laminated
	46.9-48.9 m (153.8-160.5 ft.)	5-50% pyrrhotite in finely laminated "tuff"
	49.8-50.4 m (163.5-165.3 ft.)	50% pyrrhotite, "massive"

GEOCHEMICAL DATA

Assays of mineralized intervals returned low metal values: tr-0.03% Cu, tr-0.03% Zn, nil-tr Au (A.F. 92654).

CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation.

REFERENCES

A.F. 91487 and 92654; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group
1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

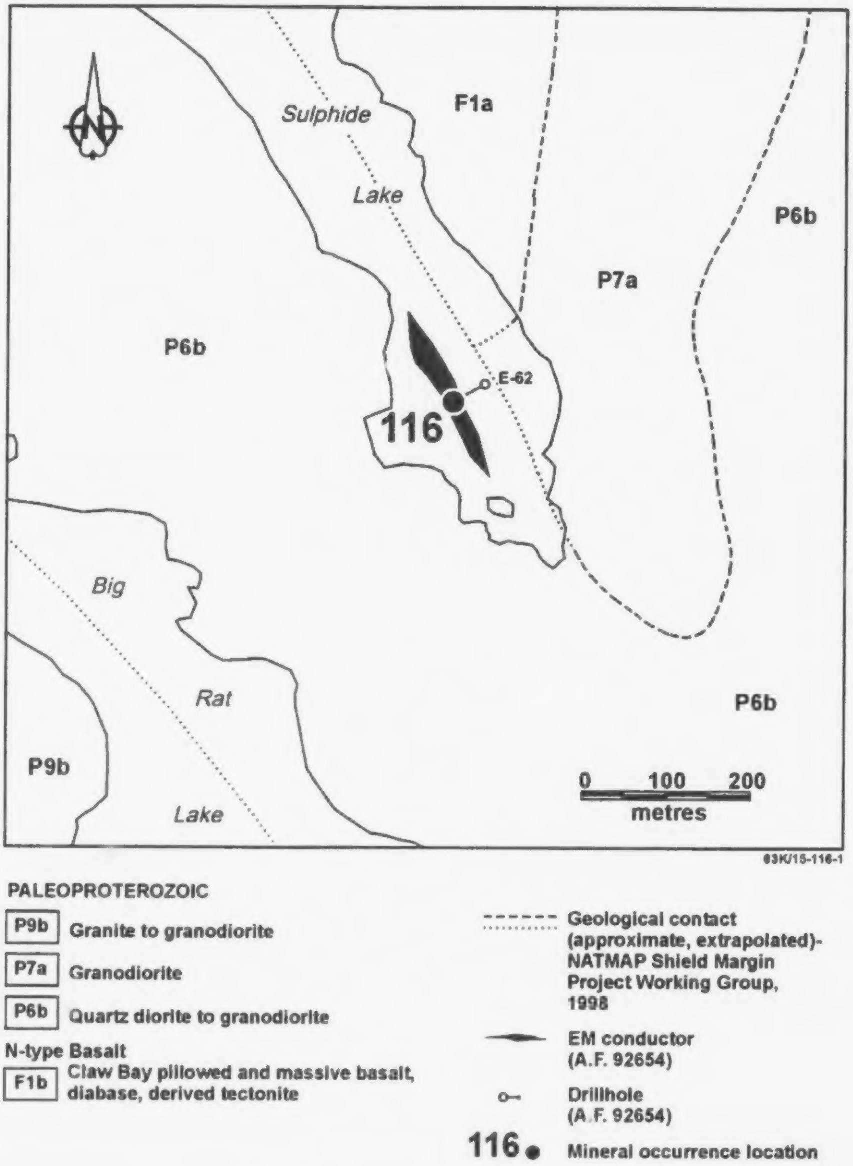

Sulphide
Lake
F1a
P6b
P7a
P6b
E-62
116
Big
Rat
Lake
P9b
P6b
0 100 200
metres
63K/15-116-1
PALEOPROTEROZOIC
P9b Granite to granodiorite
P7a Granodiorite
P6b Quartz diorite to granodiorite
N-type Basalt
F1b Claw Bay pillowed and massive basalt, diabase, derived tectonite
Geological contact (approximate, extrapolated)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 92654)
Drillhole (A.F. 92654)
116 Mineral occurrence location

Figure 116-1: Geological setting of occurrence 116.

LOCATION: 117

NAME: mineralization intersected by diamond drilling
UTM: 378730E, 6080275N
AREA: under Elbow Lake, south of west end of Webb Island
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage
AIRPHOTO: MB90025-117

EXPLORATION SUMMARY

In 1971 Noranda Exploration Company, Ltd. performed HLEM (Ronka Mk. III) surveys in the area. Some of the conductive responses were subsequently drilled by Manitoba Mineral Resources, Ltd. (A.F. 91487, 92654). Gränges Exploration Aktiebolag performed geophysical surveys in the area and drilled some of the responses in 1981 (A.F. 93052).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 117-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by mafic phyllonites, consisting of chlorite± carbonate±magnetite schist, and phyllonite derived from heterolithologic breccia (unit W6c), that form the Elbow Lake shear zone (Galley *et al.*, 1987, 1989; Syme, 1990, 1991, 1992), which is approximately 2800 m thick in this area (Syme and Whalen, 1992). Pillowed and massive aphyric McDougalls Point basalt (unit F1a) and medium- to coarse-grained, equigranular gabbro and melagabbro (unit P2a) occur as blocks within the shear zone. Long Bay basaltic conglomerate (unit F3c) is exposed to the north.

The occurrence is located close to the western margin of the Elbow Lake shear zone. Hole ELB-5 intersected a sequence consisting of medium-grained and "tuffaceous andesites", gabbro, quartz-carbonate-chlorite schist, rhyolite and fine-grained siltstone (A.F. 93052). It is unclear if the layered character of the "tuffaceous" intervals is a primary depositional feature or has been tectonically induced.

MINERALIZATION

A pyritic unit was intersected in hole ELB-5 over the following interval (A.F. 93052) (see table below).

Hole No.	Interval	Mineralization
ELB-5	89.9-92.3 m (294.8-302.7 ft.)	5% to near solid-solid pyrite and earthy pyrite, 5-10% graphite, at grey rhyolite - fine-grained siltstone contact

GEOCHEMICAL DATA

Assays of sulphide-rich intervals returned low metal values: 0.01-0.04% Cu, 0.01-0.04% Zn, 0.05-0.15 g Au/t, 0.5-1.0 g Ag/t (A.F. 93052).

CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation. The presence of graphite suggests a significant biogenic contribution.

REFERENCES

A.F. 91487, 92654 and 93052; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

Galley, A.G., Ames, D.E. and Franklin, J.M.

1987: Geological setting of gold mineralization in the Elbow Lake region, Manitoba; in Manitoba Energy and Mines, Minerals Division, Report of Field Activities, 1987, pp.175-177.

1989: Results of studies on the gold metallogeny of the Flin Flon belt; in Investigations by the Geological Survey of Canada in Manitoba and Saskatchewan during the 1984-1989 Mineral Development Agreements, Geological Survey of Canada, Open File 2133, pp.25-32.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Syme, E.C.

1990: Elbow Lake project (part of NTS 63K/15W); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1990, pp.49-57.

1991: Elbow Lake project - Part A: supracrustal rocks and structural setting; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1991, pp.14-27.

1992: Elbow Lake Project - Part A: Supracrustal rocks; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1992, pp.32-46.

Syme, E.C. and Whalen, J.B.

1992: Geology, Elbow Lake, Manitoba; Geological Survey of Canada, Preliminary 1:20 000 map, Shield-Margin Project, File ELBOW92.PS.

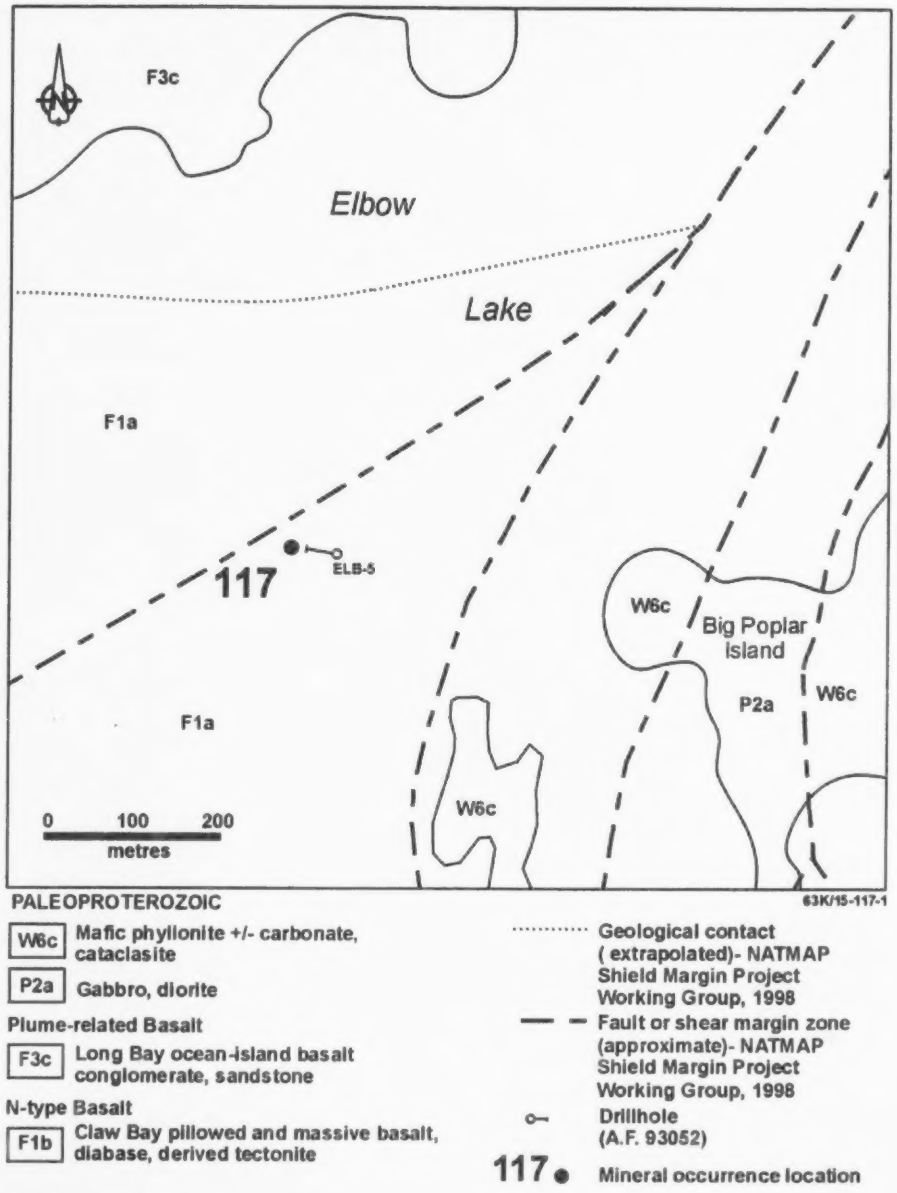

F3c
Elbow
Lake
F1a
117
ELB-5
W6c
Big Poplar Island
P2a
W6c
F1a
W6c
0 100 200
metres
PALEOPROTEROZOIC
63K/15-117-1
W6c Mafic phyllonite +/- carbonate, cataclasite
P2a Gabbro, diorite
Plume-related Basalt
F3c Long Bay ocean-island basalt conglomerate, sandstone
N-type Basalt
F1b Claw Bay pillowed and massive basalt, diabase, derived tectonite
Geological contact (extrapolated)- NATMAP Shield Margin Project Working Group, 1998
Fault or shear margin zone (approximate)- NATMAP Shield Margin Project Working Group, 1998
Drillhole (A.F. 93052)
117 Mineral occurrence location

Figure 117-1: Geological setting of occurrence 117.

LOCATION: 118

NAME: mineralization intersected by diamond drilling
UTM: 375740E, 6071125N
AREA: along Grass River, approximately 500 m S of Separation Creek
ACCESS: via boat through the Cranberry Lakes from Cranberry Portage, then traverse
AIRPHOTO: MB90025-132

EXPLORATION SUMMARY

In 1956 Cyprus Exploration Corporation Ltd. drilled a hole on a magnetic anomaly that had been defined at the occurrence (A.F. 90503). In 1973 Falconbridge Nickel Mines Limited had an airborne EM and magnetometer survey flown in the area (A.F. 91564).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 118-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by pillowed and massive aphyric flows of the McDougalls Point basalt (unit F1a), fine- to medium-grained, equigranular diabase, undifferentiated rhyolite, and quartz diorite. McDougalls Point basalt and a shear zone (unit W6c) occur to the east. Beige to grey, foliated, equigranular, hornblende-biotite quartz diorite to granodiorite (unit P6b) of the Big Rat Lake pluton outcrops to the west.

The sequence intersected in hole #13 consists of mafic to intermediate foliated volcanic rocks with minor graphitic intervals (A.F. 90503). The lithologic description does not provide much detail about the units.

MINERALIZATION

Several sulphide-rich intervals were intersected by hole #13 as follows (A.F. 90503) (see table below).

Hole No.	Interval	Mineralization
#13	78.3-79.2 m (257.0-260.0 ft.)	20% pyrrhotite, 5% pyrite, 5% graphite, in "andesite"
	83.7-84.1 m (274.5-276.0 ft.)	"almost massive" pyrrhotite, 3% pyrite and lithic fragments
	88.2-88.8 m (289.3-291.5 ft.)	"almost massive" pyrrhotite, 3% pyrite and lithic fragments
	92.4-94.8 m (303.0-311.0 ft.)	12% pyrrhotite to "massive" pyrite, minor graphite
	96.0-96.8 m (315.0-317.5 ft.)	80% pyrrhotite, in "dacitic" unit
	98.3-98.5 m (322.5-323.3 ft.)	50% pyrite, in "dacitic" unit

GEOCHEMICAL DATA

Although samples were collected from the sulphide-rich intervals, no assays were reported in the assessment file (A.F. 90503).

CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation.

REFERENCES

A.F. 90503 and 91564; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group
1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

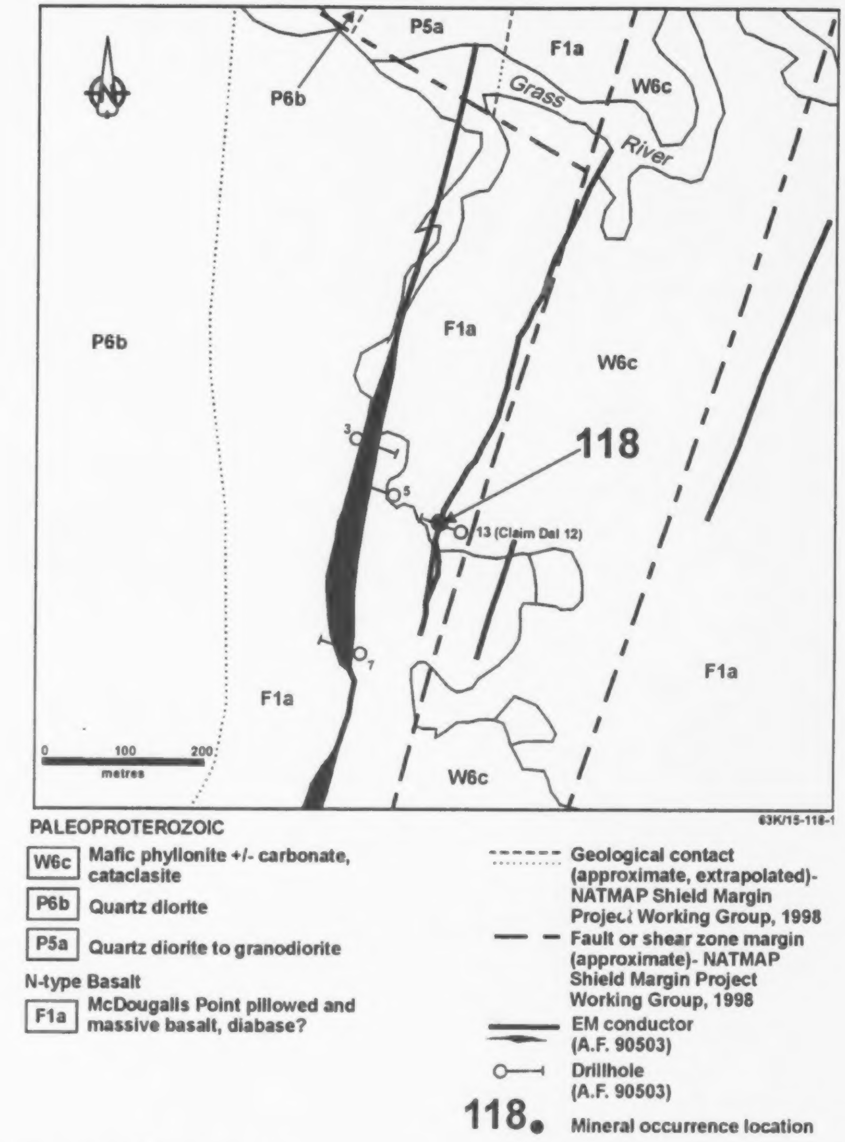

P5a
F1a
W6c
P6b
Grass
River
F1a
P6b
W6c
118
3
5
13 (Claim Dal 12)
7
F1a
F1a
W6c
0
100
200
metres
63K/15-118-1
PALEOPROTEROZOIC
W6c Mafic phyllonite +/- carbonate, cataclasite
P6b Quartz diorite
P5a Quartz diorite to granodiorite
N-type Basalt
F1a McDougalls Point pillowed and massive basalt, diabase?
Geological contact (approximate, extrapolated)- NATMAP Shield Margin Project Working Group, 1998
Fault or shear zone margin (approximate)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 90503)
Drillhole (A.F. 90503)
118● Mineral occurrence location

Figure 118-1: Geological setting of occurrence 118.

LOCATION: 119

NAME: mineralization intersected by diamond drilling
UTM: 375490E, 6070785N
AREA: west of Grass River, approximately 900 m SSW of Separation Creek
ACCESS: via boat through the Cranberry Lakes from Cranberry Portage, then traverse
AIRPHOTO: MB90025-132

EXPLORATION SUMMARY

In 1953 and 1956 Cyprus Exploration Corporation Ltd. drilled several holes on a magnetic anomaly that had been defined at the occurrence (A.F. 90503). In 1973 Falconbridge Nickel Mines Limited had an airborne EM and magnetometer survey flown in the area (A.F. 91564).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 119-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by pillowed and massive aphyric flows of the McDougalls Point basalt (unit F1a), fine- to medium-grained, equigranular diabase, undifferentiated rhyolite, and quartz diorite. McDougalls Point basalt and a shear zone (unit W6c) occur to the east. Beige to grey, foliated, equigranular, hornblende-biotite quartz diorite to granodiorite (unit P6b) of the Big Rat Lake pluton outcrops to the west.

The lithologic descriptions do not provide much information about the units (A.F. 90503). Hole #3, #5 and #12 are dominated by foliated volcanic rock that is feldspar-phyric in places. Hole #12 intersected a lithologic sequence that includes quartz porphyry, quartz-feldspar porphyry and quartz diorite. The litholog for hole #7 indicates it is dominated by "banded metasedimentary rocks". It is unclear if the layered character of the "banded" intervals is a primary depositional feature or has been tectonically induced.

MINERALIZATION

Sulphide mineralization was intersected over the following intervals (A.F. 90503) (see table below).

Hole No.	Interval	Mineralization
#3	30.2-32.9 m (99.0-108.0 ft.)	to 50% pyrite, graphitic
#5	32.0-32.9 m (105.0-108.0 ft.)	"well mineralized" with pyrite, in foliated mafic (?) volcanic rock
#7	26.4-39.6 m (86.5-130.0 ft.)	15-30% pyrite±pyrrhotite, graphitic, within banded "metasedimentary" rocks
#12	31.7-32.3 m (104.0-106.0 ft.)	30% pyrite in pyrite-graphite schist
	35.4-36.3 m (116.0-119.0 ft.)	35% pyrite, 10% graphite, in quartz-feldspar porphyry

GEOCHEMICAL DATA

Although samples were collected from the sulphide-rich intervals, no assays were reported in the assessment file (A.F. 90503).

CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation.

REFERENCES

A.F. 90503 and 91564; Cancelled Assessment File, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

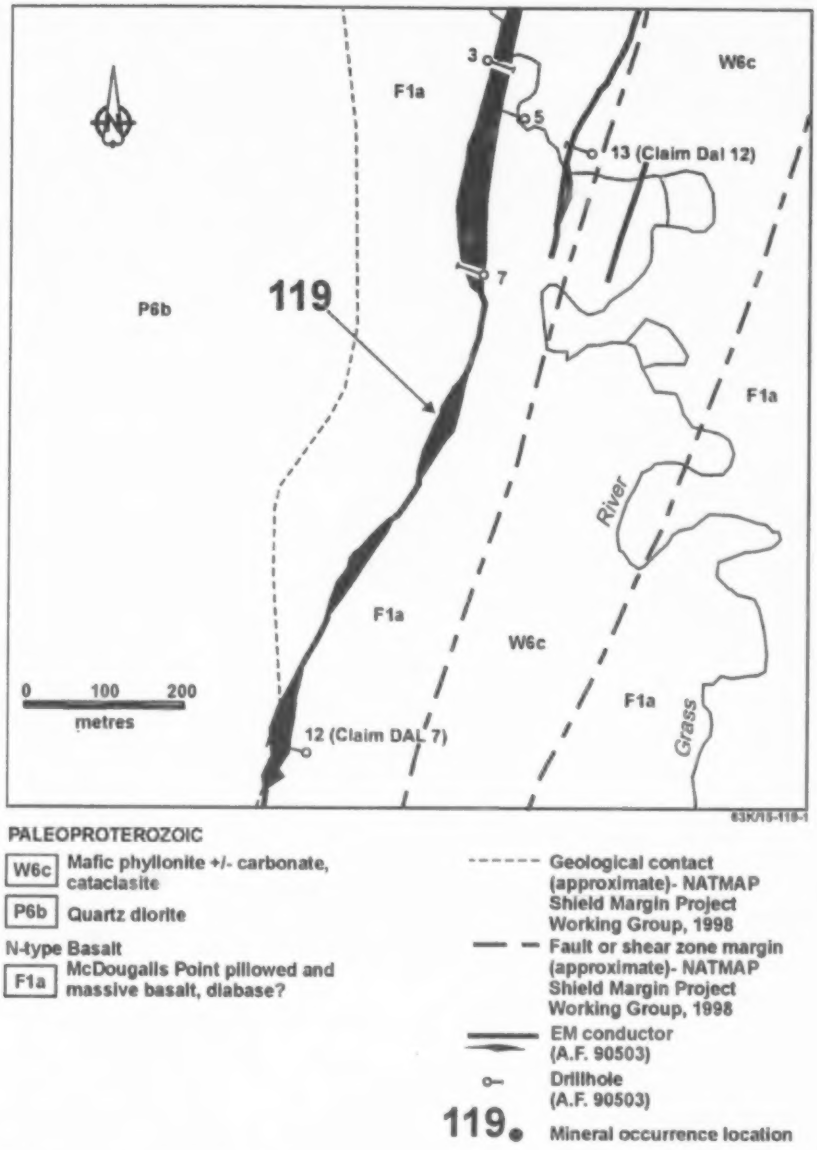

3
5
13 (Claim Dal 12)
7
W6c
F1a
P6b
119
F1a
W6c
F1a
River
Grass
12 (Claim DAL 7)
0 100 200
metres
63K/16-119-1
PALEOPROTEROZOIC
W6c Mafic phyllonite +/- carbonate, cataclasite
P6b Quartz diorite
N-type Basalt
F1a McDougalls Point pillowed and massive basalt, diabase?
Geological contact (approximate)- NATMAP Shield Margin Project Working Group, 1998
Fault or shear zone margin (approximate)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 90503)
Drillhole (A.F. 90503)
119 Mineral occurrence location

Figure 119-1: Geological setting of occurrence 119.

LOCATION: 120

NAME: mineralization intersected by diamond drilling
UTM: 375290E, 6069745N
AREA: west of Grass River, approximately 2 km SSW of Separation Creek
ACCESS: via boat through the Cranberry Lakes from Cranberry Portage, then traverse
AIRPHOTO: MB90025-132

EXPLORATION SUMMARY

In 1956 Cyprus Exploration Corporation Ltd. drilled a hole on a magnetic anomaly that had been defined at the occurrence (A.F. 90503). In 1973 Falconbridge Nickel Mines Limited had an airborne EM and magnetometer survey flown in the area (A.F. 91564). In 1981 Gränges Exploration Aktiebolag drill tested several EM (?) responses in the area (A.F. 93256). Most of these holes intersected graphite and pyrite or pyrite-pyrrhotite-rich units.

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 120-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by oikocrystic diabase (unit P2f), and pillowed and massive, aphyric McDougalls Point basalt (unit F1a) containing fine- to medium-grained diabase. A shear zone (unit W6c) cuts the McDougalls Point basalt and diabase to the east of the occurrence. Beige to grey, foliated, equigranular, hornblende-biotite quartz diorite to granodiorite (unit P6b) of the Big Rat Lake pluton outcrops to the west.

Hole #11, drilled by Cyprus Exploration Corporation, intersected a sequence dominated by foliated mafic volcanic rock ("andesite") (A.F. 90503). Lesser felsic intrusions and diorite are also present. Graphite is a minor associated constituent in some intervals. The lithologic descriptions do not provide much information about the units. Hole BE-77, drilled by Gränges Exploration, intersected fine-grained mafic volcanic rock ("andesite") and derived quartz-biotite-chlorite schist, and medium-grained, magnetite-bearing gabbro (A.F. 93256).

MINERALIZATION

Sulphide mineralization was intersected over one interval in hole #11 (A.F. 90503). Two sulphide-rich intervals were intersected in hole BE-77, but the character of the mineralization was not described in the lithologs (A.F. 93256) (see table below).

Hole No.	Interval	Mineralization
#11	51.7-63.2 m (169.5-207.5 ft.)	"massive" pyrite, fine- to coarse-grained, minor graphite, in foliated "andesite"
BE-77	25.1-25.6 m (82.5-84.0 ft.)	5% pyrite in quartz-biotite-chlorite schist
	30.9-31.5 m (101.4-103.4 ft.)	15% pyrrhotite in quartz-biotite-chlorite schist

GEOCHEMICAL DATA

Although samples were collected from the sulphide-rich intervals, no assays were reported for hole #11. The following assay results were obtained for hole BE-77 (A.F. 93256):

Hole No.	Interval	g Au/t
BE-77	24.7-25.1 m (81.0-82.5 ft.)	0.30
	25.1-25.6 m (82.5-84.0 ft.)	4.40
	25.6-25.9 m (84.0-85.0 ft.)	0.60
	28.5-29.1 m (93.5-95.5 ft.)	5.85
	29.1-29.6 m (95.5-97.2 ft.)	0.20
	30.0-30.6 m (98.5-100.3 ft.)	2.05
	30.6-30.9 m (100.3-101.4 ft.)	0.55
	30.9-31.5 m (101.4-103.4 ft.)	5.85
	31.5-32.1 m (103.4-105.4 ft.)	3.20
	32.1-32.5 m (105.4-106.5 ft.)	0.25

CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation.

REFERENCES

A.F. 90503, 91564, and 93256; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

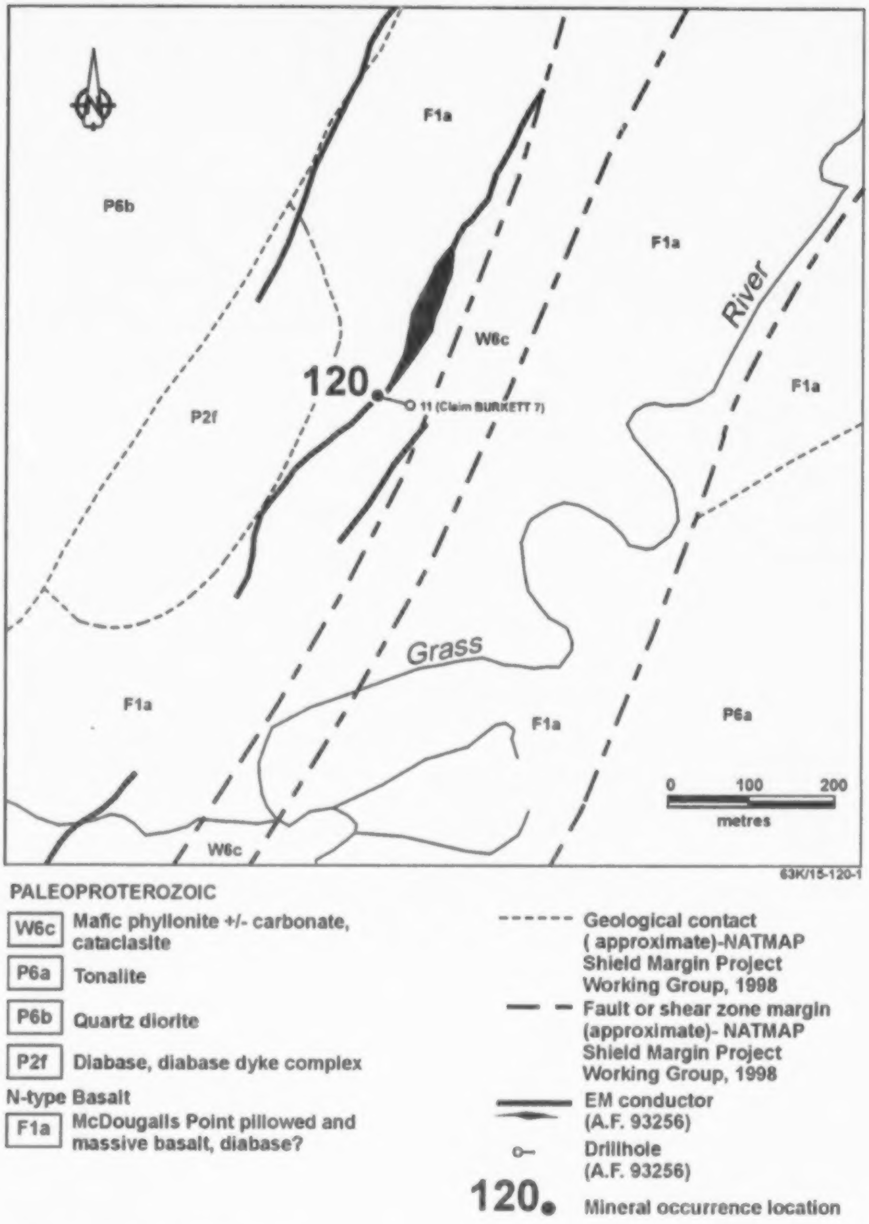

N
F1a
P6b
F1a
River
W6c
120
11 (Claim BURKETT 7)
P2f
F1a
Grass
F1a
F1a
P6a
0
100
200
metres
W6c
63K/15-120-1
PALEOPROTEROZOIC
W6c Mafic phyllonite +/- carbonate, cataclasite
P6a Tonalite
P6b Quartz diorite
P2f Diabase, diabase dyke complex
N-type Basalt
F1a McDougalls Point pillowed and massive basalt, diabase?
Geological contact (approximate)-NATMAP Shield Margin Project Working Group, 1998
Fault or shear zone margin (approximate)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 93256)
Drillhole (A.F. 93256)
120 Mineral occurrence location

Figure 120-1: Geological setting of occurrence 120.

LOCATION: 121

NAME: mineralization intersected by diamond drilling
UTM: 386890E, 6075765N
AREA: under NE part of Claw Lake
ACCESS: via bush aircraft to Claw Lake
AIRPHOTO: MB90026-138

EXPLORATION SUMMARY

In 1971 Noranda Exploration Company, Ltd. performed HLEM (Ronka Mk. III) surveys in the area. Some of the conductive responses were subsequently drilled by Manitoba Mineral Resources, Ltd. (A.F. 92654).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 121-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by a heterogeneous sheeted dyke/intrusive complex that includes diabase, tonalite, fine-grained, aphyric and porphyritic basalt, fine-grained andesite, gabbro and plagioclase-pyroxene porphyry (grouped under unit P2f). Strongly flattened, pillowed mafic flows (unit F1b) and diabase that host the Centre Lake tectonite are also exposed in the area. To the SSE, homogeneous chlorite±carbonate schist (unit W6c) intruded by diabase indicates a northerly-trending fault that follows the long axis of Claw Lake.

The sequence intersected in hole E-65 is dominated by a dark grey, strongly foliated rhyodacite (A.F. 92654). The bottom of the hole intersected grey-green, magnetite-bearing quartz-chlorite-biotite schist.

MINERALIZATION

Sulphide mineralization was intersected over the following intervals (A.F. 92654) (see table below).

Hole No.	Interval	Mineralization
E-65	30.2-31.7 m (99.0-104.0 ft.)	5% pyrite, 5% pyrrhotite, trace chalcopyrite, in rhyodacite
	53.3-53.9 m (175.0-177.0 ft.)	40% pyrite, at contact of rhyodacite with quartz-chlorite-biotite schist

GEOCHEMICAL DATA

Assays of samples collected from the two sulphide-rich areas returned only trace Au (A.F. 92654).

CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation.

REFERENCES

A.F. 92654; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

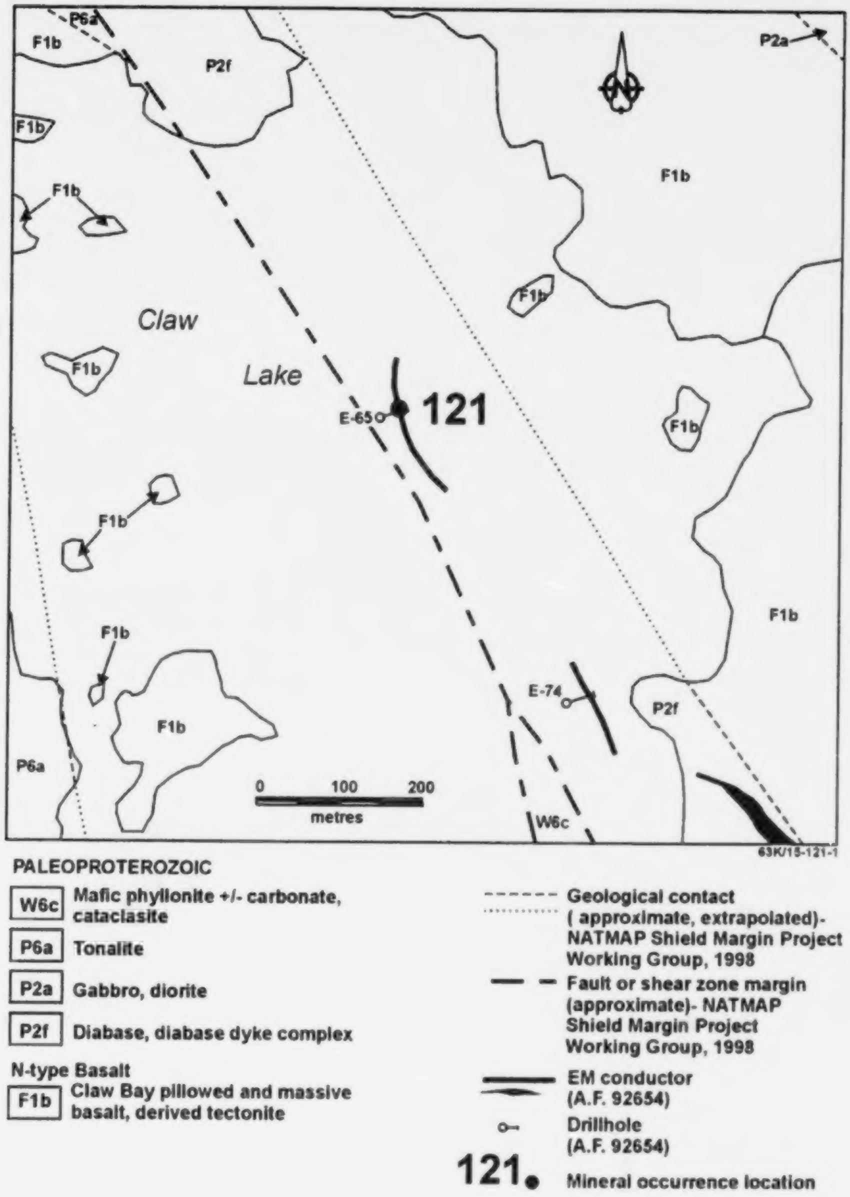

P6a
F1b
P2f
P2a
F1b
F1b
F1b
Claw
Lake
F1b
F1b
E-65
121
F1b
F1b
F1b
F1b
E-74
P2f
F1b
P6a
0
100
200
metres
W6c
63K/15-121-1
PALEOPROTEROZOIC
W6c
Mafic phyllonite +/- carbonate, cataclasite
P6a
Tonalite
P2a
Gabbro, diorite
P2f
Diabase, diabase dyke complex
N-type Basalt
F1b
Claw Bay pillowed and massive basalt, derived tectonite
Geological contact (approximate, extrapolated)- NATMAP Shield Margin Project Working Group, 1998
Fault or shear zone margin (approximate)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 92654)
Drillhole (A.F. 92654)
121
Mineral occurrence location

Figure 121-1: Geological setting of occurrence 121.

LOCATION: 122

NAME: mineralization intersected by diamond drilling
UTM: 387120E, 6075415N
AREA: under NE part of Claw Lake
ACCESS: via bush aircraft to Claw Lake
AIRPHOTO: MB90026-138

EXPLORATION SUMMARY

In 1971 Noranda Exploration Company, Ltd. performed HLEM (Ronka Mk. III) surveys in the area. Some of the conductive responses were subsequently drilled by Manitoba Mineral Resources, Ltd. (A.F. 92654).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 122-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by a heterogeneous sheeted dyke/intrusive complex that includes diabase, tonalite, fine-grained, aphyric and porphyritic basalt, fine-grained andesite, gabbro and plagioclase-pyroxene porphyry (grouped under unit P2f). Strongly flattened, pillowed mafic flows (unit F1b) and diabase that host the Centre Lake tectonite are also exposed in the area. To the SSE, homogeneous chlorite±carbonate schist (unit W6c) intruded by diabase indicates a northerly-trending fault that follows the long axis of Claw Lake.

The sequence intersected by hole E-74 is dominated by moderately to strongly foliated, mafic volcanic rock ("meta-andesite" and "dacite") (A.F. 92654). Two thin units of rhyolite breccia and rhyolite were also intersected.

MINERALIZATION

Sulphide and oxide mineralization was intersected over the following intervals (A.F. 92654) (see table below).

Hole No.	Interval	Mineralization
E-74	33.2-33.7 m (109.0-110.6 ft.)	30-40% pyrite, 1-3% magnetite, in dark green "dacite"
	36.0-36.3 m (118.0-119.0 ft.)	20% magnetite, 2% pyrite, at contact between "dacite" and rhyolite breccia
	36.3-38.0 m (119.0-124.6 ft.)	50-60% pyrite, 1-3% magnetite, in rhyolite breccia

GEOCHEMICAL DATA

Assays of samples collected from the two sulphide- and magnetite-rich areas returned only trace Au (A.F. 92654).

CLASSIFICATION

Chemical-sediment type deposit; sulphide/oxide facies iron formation.

REFERENCES

A.F. 90508 and 92654; Cancelled Assessment File, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group
1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

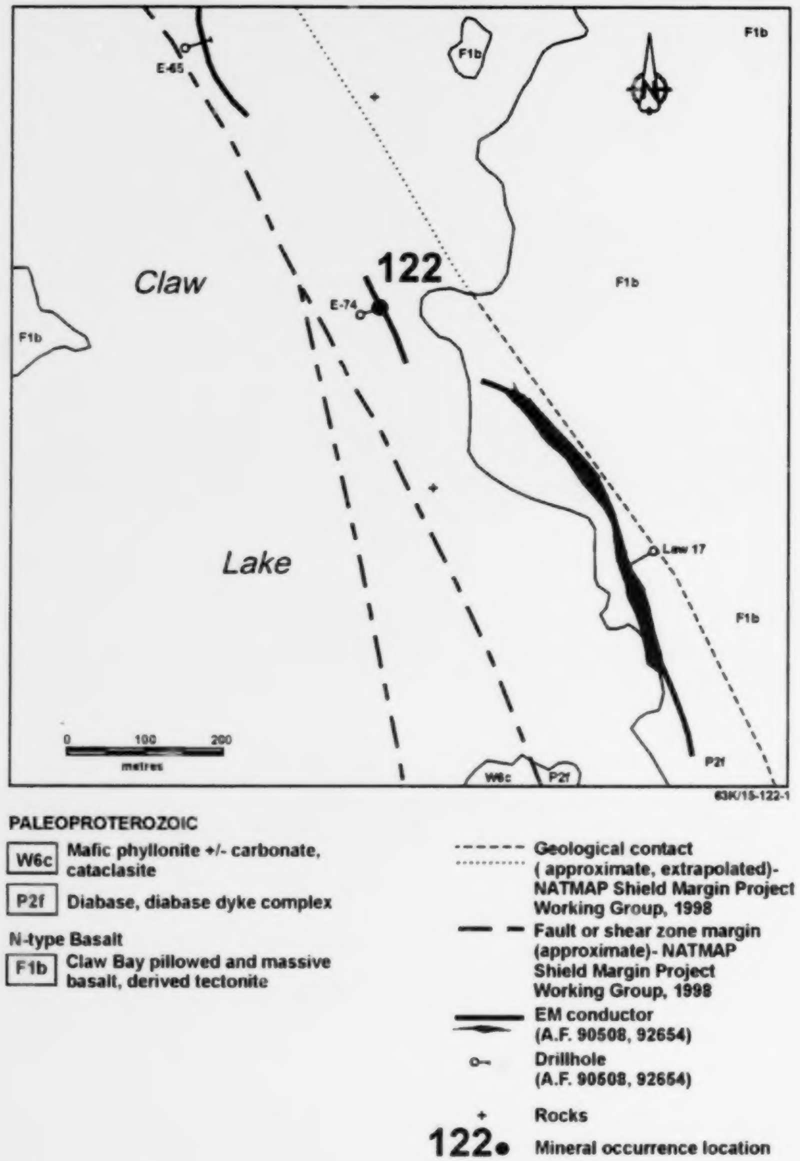

F1b
F1b
E-65
N
122
Claw
E-74
F1b
F1b
Lake
Law 17
F1b
0
100
200
metres
W6c
P2f
P2f
63K/15-122-1
PALEOPROTEROZOIC
W6c
Mafic phyllonite +/- carbonate, cataclasite
P2f
Diabase, diabase dyke complex
N-type Basalt
F1b
Claw Bay pillowed and massive basalt, derived tectonite
Geological contact (approximate, extrapolated)- NATMAP Shield Margin Project Working Group, 1998
Fault or shear zone margin (approximate)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 90508, 92654)
Drillhole (A.F. 90508, 92654)
Rocks
122
Mineral occurrence location

Figure 122-1: Geological setting of occurrence 122.

LOCATION: 123

NAME: mineralization intersected by diamond drilling
UTM: 387470E, 6075105N
AREA: along eastern shoreline of NE part of Claw Lake
ACCESS: via bush aircraft to Claw Lake, then traverse
AIRPHOTO: MB90026-137

EXPLORATION SUMMARY

In 1963 Hudson Bay Exploration and Development Company, Limited performed an HLEM survey over the occurrence area. A single hole tested the conductor in 1964 (A.F. 90508).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 123-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by a heterogeneous sheeted dyke/intrusive complex that includes diabase, tonalite, fine-grained, aphyric and porphyritic basalt, fine-grained andesite, gabbro and plagioclase-pyroxene porphyry (grouped under unit P2f). Strongly flattened, pillowed mafic flows (unit F1b) and diabase that host the Centre Lake tectonite are also exposed in the area. To the west, homogeneous chlorite±carbonate schist (unit W6c) intruded by diabase indicates a northerly-trending fault that follows the long axis of Claw Lake.

Hole LAW-17 intersected two units consisting of chlorite-feldspar-biotite gneiss and quartz-feldspar-biotite-chlorite gneiss (A.F. 90508). No further description of the units was provided in the assessment file.

MINERALIZATION

One sulphide-rich interval, containing 10% pyrite and minor pyrrhotite, was intersected by hole LAW-17 between 48.2-49.5 m (158.0-162.3 ft.) (A.F. 90508). The host rock is the chlorite-feldspar-biotite gneiss. No description of the character of the mineralization was provided in the assessment file.

GEOCHEMICAL DATA

No assays were reported for this occurrence.

CLASSIFICATION

Disseminated mineralization; not classified.

REFERENCES

A.F. 90508 and 92654; Cancelled Assessment File, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

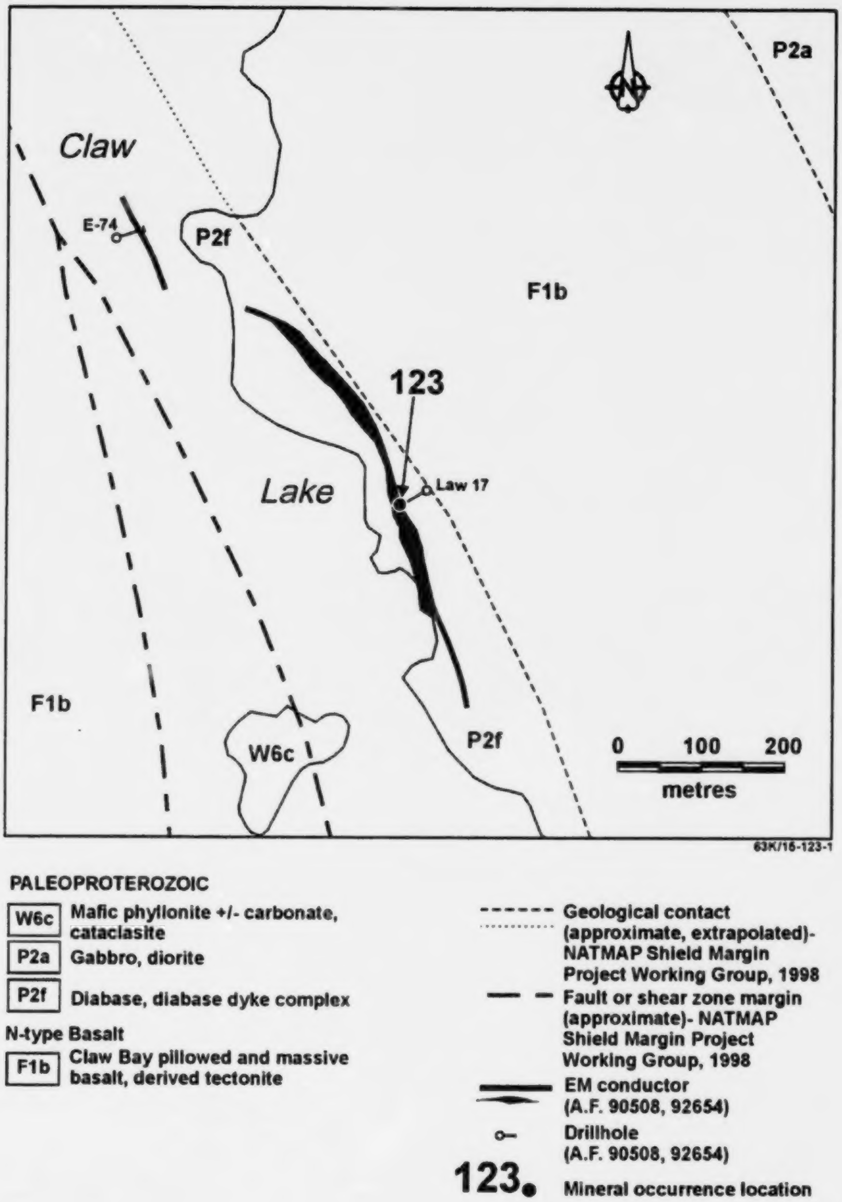

P2a
N
Claw
E-74
P2f
F1b
123
Law 17
Lake
F1b
W6c
P2f
0 100 200
metres
63K/16-123-1
PALEOPROTEROZOIC
W6c Mafic phyllonite +/- carbonate, cataclasite
P2a Gabbro, diorite
P2f Diabase, diabase dyke complex
N-type Basalt
F1b Claw Bay pillowed and massive basalt, derived tectonite
Geological contact (approximate, extrapolated)- NATMAP Shield Margin Project Working Group, 1998
Fault or shear zone margin (approximate)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 90508, 92654)
Drillhole (A.F. 90508, 92654)
123● Mineral occurrence location

Figure 123-1: Geological setting of occurrence 123.

LOCATION: 124

NAME: mineralization intersected by diamond drilling
UTM: 378970E, 6077375N
AREA: under Elbow Lake, E of north end of McDougalls Point
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage
AIRPHOTO: MB90025-120

EXPLORATION SUMMARY

In 1971 Noranda Exploration Company, Ltd. performed HLEM (Ronka Mk. III) surveys in the area. Some of the conductive responses were subsequently drilled by Manitoba Mineral Resources, Ltd. (A.F. 91485, 92654).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 124-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by chlorite-carbonate schist (unit W6c) of the Elbow Lake shear zone, and pillowed and massive, aphyric flows and synvolcanic intrusions (unit F1a) of the McDougalls Point basalt.

The sequence intersected in hole E-49 is described as consisting of banded graphitic schist, and finely laminated "siltstone" with fine-grained siliceous layers (A.F. 92654). The laminated character of the "siltstone" is probably related to the effects of the Elbow Lake shear zone rather than reflecting a primary depositional feature.

MINERALIZATION

A single mineralized interval, from 55.9-58.5 m (183.3-192.0 ft.) and consisting of "dark brown, aphanitic, massive" pyrite, was intersected in hole E-49 (A.F. 92654). It is closely associated with finely banded "siltstone" and graphitic schist.

GEOCHEMICAL DATA

No assay results were reported for this occurrence in the assessment files.

CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation. This occurrence has been strongly affected by deformation along the Elbow Lake shear zone. The association with graphite suggests a biogenic contribution.

REFERENCES

A.F. 91485 and 92654; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

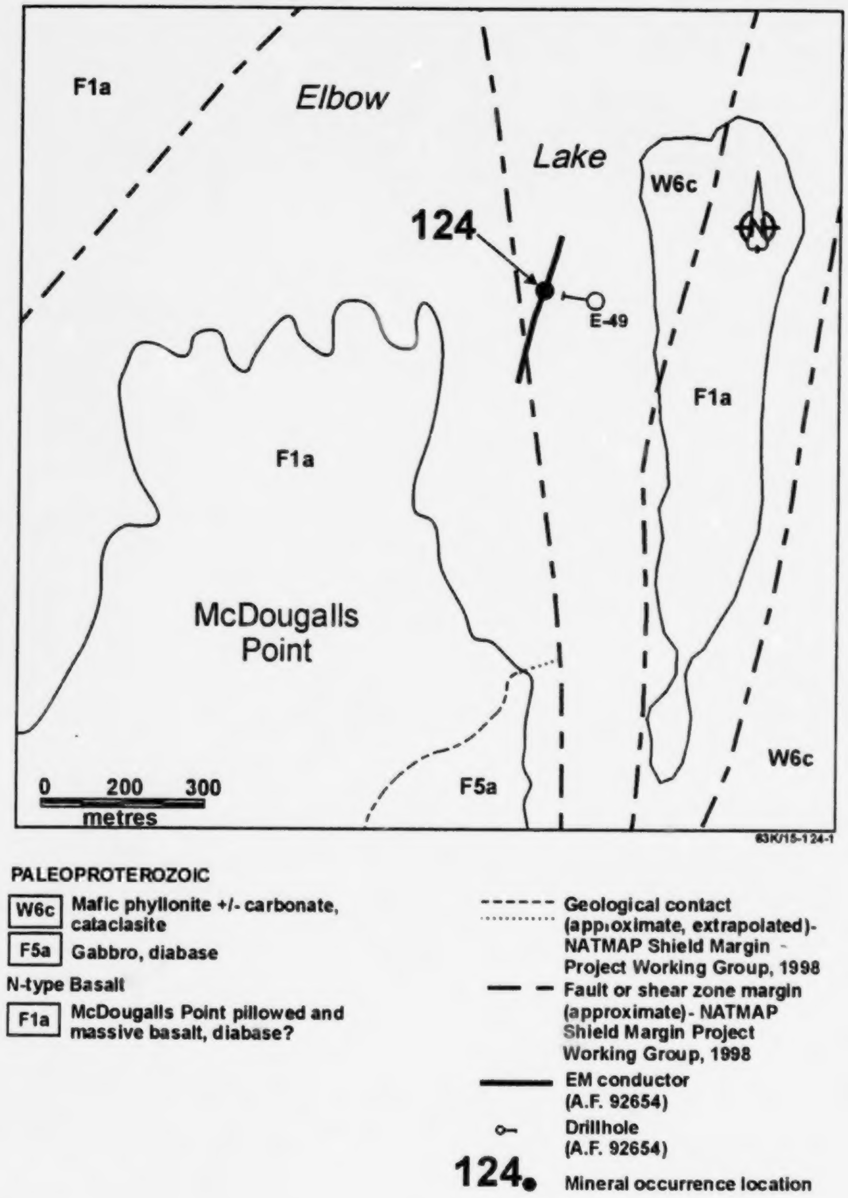

F1a
Elbow
Lake
W6c
124
E-49
F1a
F1a
McDougalls
Point
W6c
F5a
0 200 300
metres
63K/15-124-1
PALEOPROTEROZOIC
W6c Mafic phyllonite +/- carbonate, cataclasite
F5a Gabbro, diabase
N-type Basalt
F1a McDougalls Point pillowed and massive basalt, diabase?
Geological contact (approximate, extrapolated)- NATMAP Shield Margin - Project Working Group, 1998
Fault or shear zone margin (approximate)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 92654)
Drillhole (A.F. 92654)
124 Mineral occurrence location

Figure 124-1: Geological setting of occurrence 124.

LOCATION: 125

NAME: mineralization intersected by diamond drilling
UTM: 402665E, 6070905N
AREA: approximately 700 m E of Sewell Lake
ACCESS: via float equipped aircraft to Sewell Lake, then traverse
AIRPHOTO: MB90024-135

EXPLORATION SUMMARY

Gränges Exploration AB performed an HLEM (ABEM GUN) survey over the area in 1977-78 (A.F. 92443) and drilled several holes in the area in 1979 (A.F. 92441).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 125-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by gabbro and leucogabbro (unit P3c) of the differentiated Josland Lake gabbro sills (Bailes, 1980). Metasedimentary rocks (unit J9b), derived from greywacke, siltstone and mudstone, appear to the northwest of the occurrence.

Hole C-79-31 intersected medium-grained, melanocratic diorite with a chlorite-sericite±graphite±talc schist interval. Minor dark grey "tuff" occurs at the top of the hole, but this may also belong to the schistose interval. It is unclear if the diorite was the source rock of the schists.

MINERALIZATION

Sulphide mineralization was intersected over the following intervals (A.F. 92441) (see table below).

Hole No.	Interval	Mineralization
C-79-31	31.9-32.4 m (104.7-106.2 ft.)	5% pyrrhotite in chlorite-sericite schist
	34.1-34.7 m (112.0-113.8 ft.)	10% pyrite in sericite-chlorite schist
	35.0-36.5 m (114.7-119.7 ft.)	near solid pyrite with graphite in sericite-chlorite schist
	36.5-37.4 m (119.9-122.6 ft.)	near solid, earthy pyrite with 10% graphite in sericite-chlorite schist
	37.4-38.9 m (122.6-127.6 ft.)	5% pyrite in graphitic schist

GEOCHEMICAL DATA

The following assays were obtained from the mineralized intervals (A.F. 92441) (see table below).

Hole No.	Interval	%Cu	%Zn	g Au/t	g Ag/t
C-79-31	31.9-32.4 m (104.7-106.2 ft.)	0.03	0.02	0.05	0.5
	34.1-34.7 m (112.0-113.8 ft.)	0.05	0.05	0.05	0.5
	35.0-36.5 m (114.7-119.7 ft.)	0.10	0.04	0.05	2.0
	36.5-37.4 m (119.7-122.6 ft.)	0.02	0.03	0.05	2.0
	37.4-38.9 m (122.6-127.6 ft.)	0.02	0.13	0.05	1.0

CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation. Sulphide mineralization appears to be concentrated in a schistose zone within the gabbroic intrusion. This may represent a block of pyrite-graphite chemical metasediments within the gabbroic intrusion. Its platinum-group element content should be investigated.

REFERENCES

A.F. 92441 and 92443; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Energy and Minerals Division

Bailes, A.H.

1980: Geology of the File Lake Area; Manitoba Energy and Mines, Mineral Resources Division, Geological Report 78-1, 134 pp.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

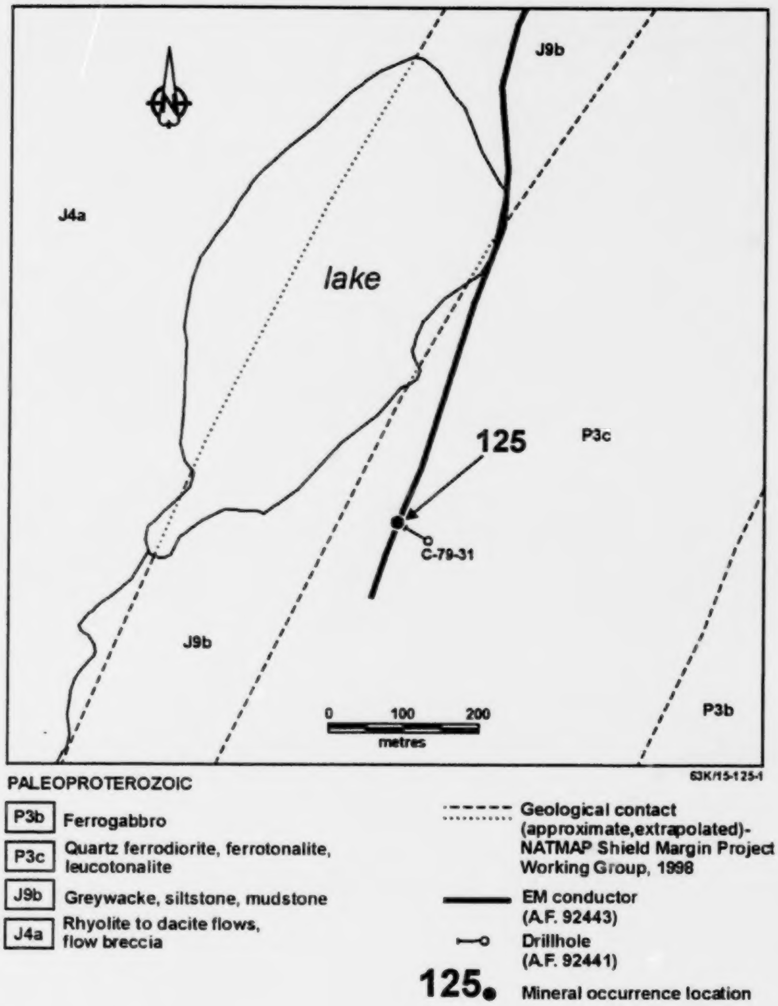

J9b
J4a
lake
125
P3c
C-79-31
J9b
0 100 200
metres
P3b
63K/15-125-1
PALEOPROTEROZOIC
P3b Ferrogabbro
P3c Quartz ferrodiorite, ferrotonalite, leucotonalite
J9b Greywacke, siltstone, mudstone
J4a Rhyolite to dacite flows, flow breccia
Geological contact (approximate,extrapolated)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 92443)
Drillhole (A.F. 92441)
125 Mineral occurrence location

Figure 125-1: Geological setting of occurrence 125.

LOCATION: 126

NAME: mineralization intersected by diamond drilling
UTM: 403040E, 6071825N
AREA: approximately 900 m E of Sewell Lake
ACCESS: via float equipped aircraft to Sewell Lake, then traverse
AIRPHOTO: MB90024-125

EXPLORATION SUMMARY

Gränges Exploration AB performed an HLEM (ABEM GUN) survey over the area in 1977-78 (A.F. 92443) and drilled several holes in the area in 1979 (A.F. 92441).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 126-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by metasedimentary rocks derived from greywacke, sandstone and mudstone (unit J9b). Rhyolitic to dacitic flows and dacitic flow breccia (unit J4a) of the Dickstone formation occur to the NW of the occurrence, and gabbro and leucogabbro of the differentiated Josland Lake gabbro sills (Bailes, 1980) underlie the area to the SE.

Hole C-79-32 intersected a sequence dominated by light grey, coarse-grained tuff, some of which is described as being fragmental (A.F. 92441). A 1.2 m (4.1 ft.) chlorite schist interval separates this lithology into two units. No indication of the composition of the tuff is provided in the lithologic description of the core.

MINERALIZATION

Sulphide mineralization was intersected over the following intervals (A.F. 92441) (see table below).

Hole No.	Interval	Mineralization
C-79-32	6.5-6.6 m (21.2-21.7 ft.)	5% pyrite in coarse-grained, light grey tuff
	21.2-21.9 m (69.5-71.9 ft.)	5-10% pyrite in chlorite schist
	31.9-32.4 m (71.9-73.6 ft.)	40% pyrite, 5% pyrrhotite in chlorite schist
	31.5-31.8 m (103.4-104.3 ft.)	25% pyrite in coarse-grained, light grey tuff

GEOCHEMICAL DATA

The following assays were obtained from the mineralized intervals (A.F. 92441) (see table below).

Hole No.	Interval	%Cu	%Zn	g Au/t	g Ag/t
C-79-32	6.5-6.6 m (21.2-21.7 ft.)	0.02	0.01	0.05	0.5
	21.2-21.9 m (69.5-71.9 ft.)	0.05	0.05	0.05	1.0
	21.9-22.4 m (71.9-73.6 ft.)	0.25	0.37	0.05	3.0
	31.5-31.8 m (103.4-104.3 ft.)	0.20	1.06	0.05	2.0

CLASSIFICATION

Stratabound massive sulphide type deposit; volcanic rock associated. The presence of chlorite schist suggests alteration associated with a hydrothermal system.

REFERENCES

A.F. 92441 and 92443; Cancelled Assessment File, Manitoba Industry, Trade and Mines, Minerals Division.

Bailes, A.H.

1980: Geology of the File Lake Area; Manitoba Energy and Mines, Mineral Resources Division, Geological Report 78-1, 134 pp.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

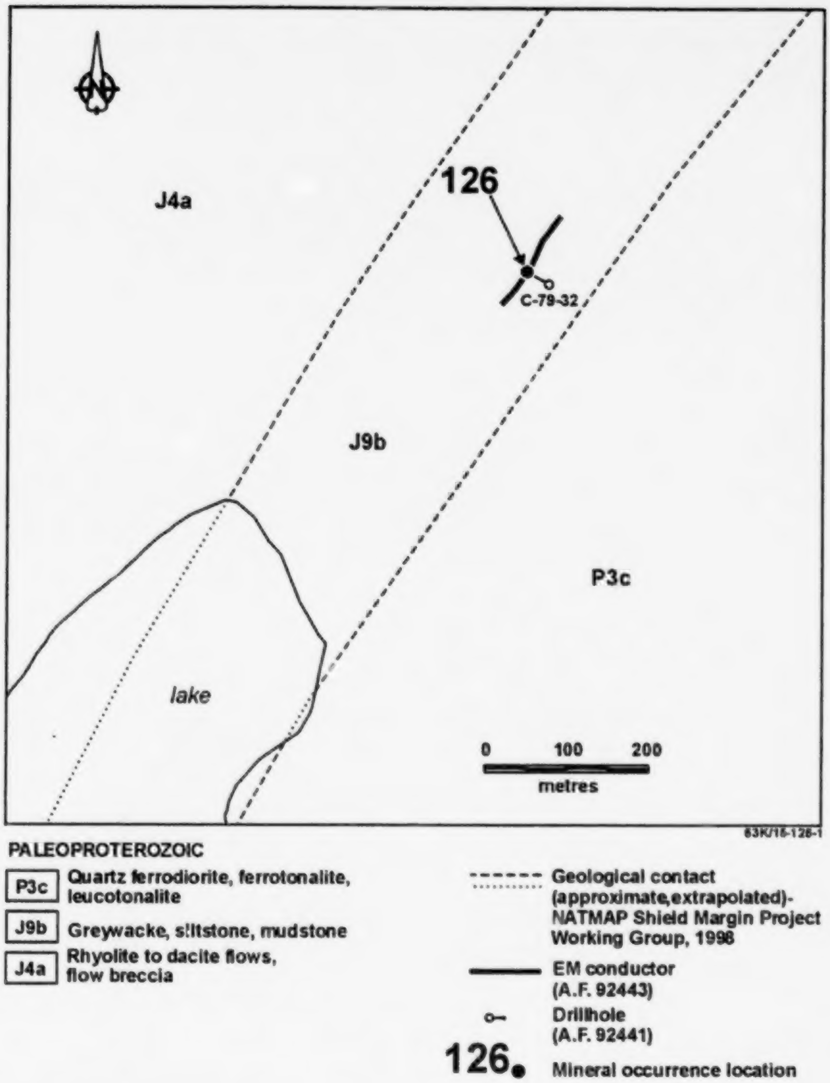

J4a
126
C-79-32
J9b
P3c
lake
0
100
200
metres
83K/16-126-1
PALEOPROTEROZOIC
P3c
Quartz ferrodiorite, ferrotonalite, leucotonalite
J9b
Greywacke, siltstone, mudstone
J4a
Rhyolite to dacite flows, flow breccia
Geological contact (approximate,extrapolated)-NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 92443)
Drillhole (A.F. 92441)
126
Mineral occurrence location

Figure 126-1: Geological setting of occurrence 126.

LOCATION: 127

NAME: mineralization intersected by diamond drilling
UTM: 399870E, 6092495N
AREA: approximately 2.1 km W of Loonhead Lake
ACCESS: via bush aircraft to Loonhead or Dow Lake, then traverse
AIRPHOTO: MB90024-160

EXPLORATION SUMMARY

In 1956 and 1957 Hudson Bay Exploration and Development Company, Limited performed an EM (Loop-Frame equipment) survey. Conductors delineated by this survey were drilled in 1957 and 1958 (A.F. 90490). In 1981 an airborne EM (INPUT) and magnetic survey was performed for BP Minerals Limited, followed by a geological mapping programme (A.F. 92828). In 1985 and 1986 Noko Resources Incorporated undertook geological mapping, prospecting, and rock and soil sampling programmes on their property (A.F. 92902, 92903).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 127-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by basalt, diabase, and derived amphibolite (unit F1g) with local felsic gneiss. This assemblage has been intruded by a pyroxenitic metagabbro stock (unit P3a) (Zwanzig, 1995, 1996a, b). This stock is geochemically similar to the strongly differentiated Josland Lake tholeiitic gabbro intrusions (Bailes, 1980).

Hole MUZ-7 intersected quartz-hornblende schists to gneisses, with minor garnetiferous "tuff" (A.F. 90490). Gabbro and diorite occur at the bottom of the hole.

MINERALIZATION

Hole MUZ-7 intersected "near solid" pyrrhotite with minor pyrite from 55.2-56.1 m (181.0-183.9 ft.) (A.F. 90490). The host rock is hornblende-quartz schist to gneiss with dioritic intervals.

GEOCHEMICAL DATA

No assays were reported for the mineralized interval intersected in this hole.

CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation. Given the proximity of this occurrence to a mafic intrusion, the presence of platinum-group elements should be considered.

REFERENCES

A.F. 90490, 92828, 92902 and 92903; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

Bailes, A.H.

1980: Geology of the File Lake Area; Manitoba Energy and Mines, Mineral Resources Division, Geological Report GR78-1, 134 pp.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Zwanzig, H.V.

1995: Geology of the Dow Lake area (parts of NTS 63K/15 and 63N/2); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1995, pp. 19-23.

1996a: Geology of the Dow Lake-Martell Lake area (parts of NTS 63K/15 and 63N/2); Cancelled Assessment File, Manitoba Energy and Mines, Minerals Division, Report of Activities, 1996, pp. 21-28.

1996b: Geology of the Dow Lake-Martell Lake area (parts of NTS 63K/15 and 63N/2); Cancelled Assessment File, Manitoba Energy and Mines, Preliminary Map 1996K-1, 1:20 000.

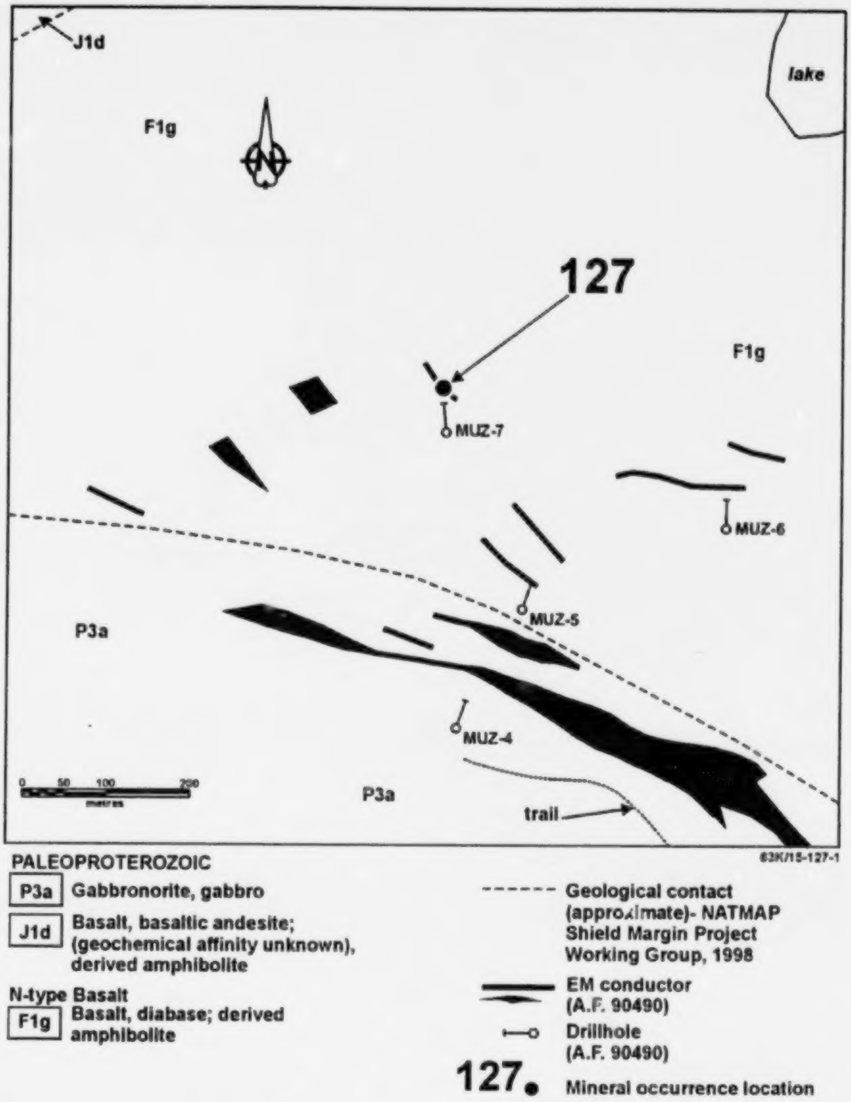

J1d
F1g
lake
127
F1g
MUZ-7
MUZ-6
MUZ-5
P3a
MUZ-4
0 50 100 200
metres
P3a
trail
63K/15-127-1
PALEOPROTEROZOIC
P3a Gabbronorite, gabbro
J1d Basalt, basaltic andesite; (geochemical affinity unknown), derived amphibolite
N-type Basalt
F1g Basalt, diabase; derived amphibolite
Geological contact (approximate)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 90490)
Drillhole (A.F. 90490)
127. Mineral occurrence location

Figure 127-1: Geological setting of occurrence 127.

LOCATION: 128

NAME: mineralization intersected by diamond drilling
UTM: 400210E, 6092375N
AREA: approximately 1.8 km W of Loonhead Lake
ACCESS: via bush aircraft to Loonhead or Dow Lake, then traverse
AIRPHOTO: MB90024-160

EXPLORATION SUMMARY

In 1956 and 1957 Hudson Bay Exploration and Development Company, Limited performed an EM (Loop-Frame equipment) survey. Conductors delineated by this survey were drilled in 1957 and 1958 (A.F. 90490). In 1981 an airborne EM (INPUT) and magnetic survey was performed for BP Minerals Limited, followed by a geological mapping programme (A.F. 92828). In 1985 and 1986 Noko Resources Incorporated undertook a geological mapping, prospecting, and rock and soil sampling programme on their property (A.F. 92902, 92903).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 128-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by basalt, diabase, and derived amphibolite (unit F1g) with local felsic gneiss that has been intruded by a pyroxenitic metagabbro stock (unit P3a) (Zwanzig, 1995, 1996a, b). The stock is geochemically similar to the strongly differentiated Josland Lake tholeiitic gabbro intrusions (Bailes, 1980).

Hole MUZ-6 intersected foliated "andesite", diorite, quartz-hornblende schistose to gneissic rocks, with minor "tuff" (A.F. 90490). Gabbro occurs at the bottom of the hole.

MINERALIZATION

The following mineralized intervals were intersected in hole MUZ-6 (A.F. 90490) (see table below).

Interval	Mineralization
46.4-48.9 m (152.1-160.4 ft.)	"slight to near solid" pyrrhotite, minor pyrite, in quartz-hornblende-biotite schist
53.0-53.2 m (174.0-174.7 ft.)	"near solid" pyrrhotite, in quartz-hornblende-biotite schist
72.1-72.5 m (236.7-237.9 ft.)	"near solid" pyrrhotite, minor pyrite, in quartz-hornblende schist
85.0-86.0 m (278.9-282.2 ft.)	"near solid" pyrrhotite, minor pyrite, in quartz-hornblende schist
91.1-92.5 m (299.0-303.5 ft.)	"fair to near solid" pyrrhotite, minor pyrite, trace chalcopyrite in quartz-hornblende schist
100.9-105.3 m (331.0-345.5 ft.)	"fair to near solid" pyrrhotite, minor pyrite, in quartz-biotite-horn-blende schist
144.5-146.1 m (474.2-479.3 ft.)	"fair to near solid" pyrrhotite, in quartz-hornblende schist

GEOCHEMICAL DATA

No assays were reported for the mineralized intervals intersected in this hole.

CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation. Given the proximity of this occurrence to a mafic intrusion, the presence of platinum-group elements should be considered.

REFERENCES

A.F. 90490, 92828, 92902 and 92903; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

Bailes, A.H.

1980: Geology of the File Lake Area; Manitoba Energy and Mines, Mineral Resources Division, Geological Report GR78-1, 134 pp.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Zwanzig, H.V.

1995: Geology of the Dow Lake area (parts of NTS 63K/15 and 63N/2); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1995, pp. 19-23.

1996a: Geology of the Dow Lake-Martell Lake area (parts of NTS 63K/15 and 63N/2); Cancelled Assessment File, Manitoba Energy and Mines, Minerals Division, Report of Activities, 1996, pp. 21-28.

1996b: Geology of the Dow Lake-Martell Lake area (parts of NTS 63K/15 and 63N/2); Cancelled Assessment File, Manitoba Energy and Mines, Preliminary Map 1996K-1, 1:20 000.

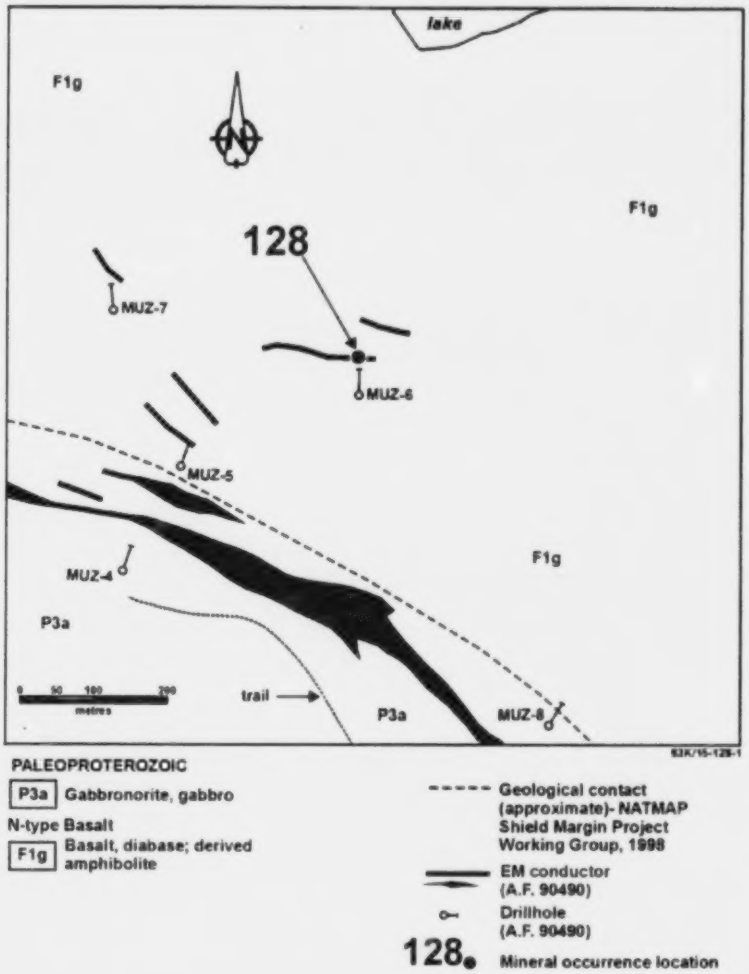

lake
F1g
F1g
128
MUZ-7
MUZ-6
MUZ-5
F1g
MUZ-4
P3a
0 50 100 200
metres
trail
P3a
MUZ-8
63K/16-128-1
PALEOPROTEROZOIC
P3a Gabbronorite, gabbro
N-type Basalt
F1g Basalt, diabase; derived amphibolite
Geological contact (approximate)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 90490)
Drillhole (A.F. 90490)
128 Mineral occurrence location

Figure 128-1: Geological setting of occurrence 128.

LOCATION: 129

NAME: mineralization intersected by diamond drilling
UTM: 399970E, 6092275N
AREA: approximately 2.0 km W of Loonhead Lake
ACCESS: via bush aircraft to Loonhead or Dow Lake, then traverse
AIRPHOTO: MB90024-160

EXPLORATION SUMMARY

In 1956 and 1957 Hudson Bay Exploration and Development Company, Limited performed an EM (Loop-Frame equipment) survey. Conductors delineated by this survey were drilled in 1957 and 1958 (A.F. 90490). In 1981 an airborne EM (INPUT) and magnetic survey was performed for BP Minerals Limited, followed by a geological mapping programme (A.F. 92828). In 1985 and 1986 Noko Resources Incorporated undertook a geological mapping, prospecting, and rock and soil sampling programme on their property (A.F. 92902, 92903).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 129-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by basalt, diabase, and derived amphibolite (unit F1g) with local felsic gneiss. This sequence has been intruded by a pyroxenitic metagabbro stock (unit P3a) (Zwanzig, 1995, 1996a, b). The stock is geochemically similar to the strongly differentiated Josland Lake tholeiitic gabbro intrusions (Bailes, 1980).

Hole MUZ-5 intersected a sequence consisting of hornblende-quartz±biotite±sericite schists to gneisses with minor "andesite" and unspecified coarse-grained units ("pegmatite") (A.F. 90490).

MINERALIZATION

The following mineralized intervals were intersected in hole MUZ-5 (A.F. 90490) (see table below).

Interval	Mineralization
8.0-9.4 m (26.3-30.9 ft.)	"near solid" pyrrhotite, minor pyrite, trace chalcopyrite, in quartz-biotite-sericite schist
12.9-13.7 m (42.3-45.0 ft.)	"near solid" pyrrhotite, minor pyrite and magnetite, trace chalcopyrite, in quartz-hornblende-biotite schist
14.3-16.4 m (47.0-53.8 ft.)	"near solid" pyrrhotite, minor pyrite, trace chalcopyrite, in cherty quartz-biotite-hornblende schist
47.5-48.2 m (155.9-158.0 ft.)	"fair to near solid" pyrrhotite, minor pyrite, in cherty quartz-biotite schist
118.6-119.8 m (389.0-393.0 ft.)	"well mineralized" to "near solid" sulphides, in quartz-sericite-horn-blende schist to gneiss

GEOCHEMICAL DATA

No assays were reported for the mineralized intervals intersected in this hole.

CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation. Given the proximity of this occurrence to a mafic intrusion, the presence of platinum-group elements should be considered.

REFERENCES

A.F. 90490, 92828, 92902 and 92903; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

Bailes, A.H.

1980: Geology of the File Lake Area; Manitoba Energy and Mines, Mineral Resources Division, Geological Report GR78-1, 134 pp.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Zwanzig, H.V.

1995: Geology of the Dow Lake area (parts of NTS 63K/15 and 63N/2); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1995, pp. 19-23.

1996a: Geology of the Dow Lake-Martell Lake area (parts of NTS 63K/15 and 63N/2); Cancelled Assessment File, Manitoba Energy and Mines, Minerals Division, Report of Activities, 1996, pp. 21-28.

1996b: Geology of the Dow Lake-Martell Lake area (parts of NTS 63K/15 and 63N/2); Cancelled Assessment File, Manitoba Energy and Mines, Preliminary Map 1996K-1, 1:20 000.

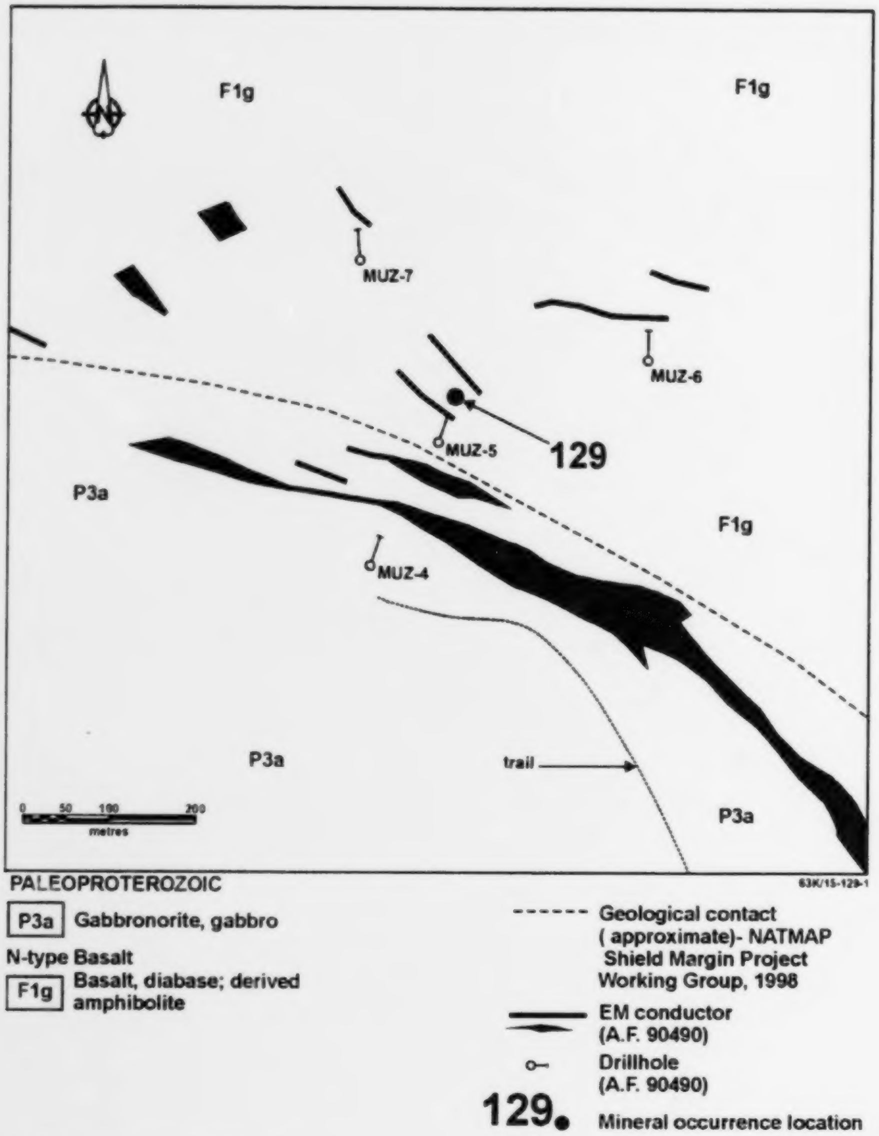

F1g
F1g
MUZ-7
MUZ-6
MUZ-5
129
P3a
F1g
MUZ-4
P3a
trail
P3a
0 50 100 200
metres
63K/15-129-1
PALEOPROTEROZOIC
P3a Gabbronorite, gabbro
N-type Basalt
F1g Basalt, diabase; derived amphibolite
Geological contact (approximate)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 90490)
Drillhole (A.F. 90490)
129● Mineral occurrence location

Figure 129-1: Geological setting of occurrence 129.

LOCATION: 130

NAME: mineralization intersected by diamond drilling
UTM: 399900E, 6092145N
AREA: approximately 2.0 km W of Loonhead Lake
ACCESS: via bush aircraft to Loonhead or Dow Lake, then traverse
AIRPHOTO: MB90024-160

EXPLORATION SUMMARY

In 1956 and 1957 Hudson Bay Exploration and Development Company, Limited performed an EM (Loop-Frame equipment) survey. Conductors delineated by this survey were drilled in 1957 and 1958 (A.F. 90490). In 1981 an airborne EM (INPUT) and magnetic survey was performed for BP Minerals Limited, followed by a geological mapping programme (A.F. 92828). In 1985 and 1986 Noko Resources Incorporated undertook geological mapping, prospecting, and rock and soil sampling programmes on their property (A.F. 92902, 92903).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 130-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by basalt, diabase, and derived amphibolite (unit F1g) with local felsic gneiss. This sequence has been intruded by a pyroxenitic metagabbro stock (unit P3a) (Zwanzig, 1995, 1996a, b). The stock is geochemically similar to the strongly differentiated Josland Lake tholeiitic gabbro intrusions (Bailes, 1980).

Holes MUZ-3 and -4 intersected a sequence consisting of hornblende-quartz±biotite±sericite±chlorite schists to gneisses with minor "andesite" and unspecified coarse-grained units ("pegmatite") (A.F. 90490).

MINERALIZATION

The following mineralized intervals were intersected in holes MUZ-3 and -4 (A.F. 90490) (see table below).

Hole No.	Interval	Mineralization
MUZ-3	43.4-55.0 m (142.5-180.5 ft.)	"well mineralized to near solid" pyrite and pyrrhotite, in fine grained, siliceous horn-blende rock
	92.0-93.9 m (301.8-308.2 ft.)	"well mineralized" with pyrrhotite and slight pyrite, in quartz-hornblende-sericite schist
	97.5-102.1 m (320.0-335.0 ft.)	"well mineralized to near solid" pyrite and pyrrhotite, in fine grained hornblende rock
MUZ-4	53.5-59.3 m (175.5-194.5 ft.)	sections "well mineralized to near solid" pyrite and pyrrhotite, in hornblende-sericite schist
	101.0-111.6 m (331.5-366.0 ft.)	"slight to near solid" pyrrhotite, in quartz-hornblende±sericite schist to gneiss
	112.9-115.4 m (370.5-378.5 ft.)	"near solid" pyrrhotite, in quartz-hornblende-sericite schist
	116.0-126.5 m (380.5-415.0 ft.)	"slight to near solid" pyrrhotite, in quartz-hornblende-sericite schist

GEOCHEMICAL DATA

No assays were reported for the mineralized intervals intersected in this hole.

CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation. Given the proximity of this occurrence to a mafic intrusion, the presence of platinum-group elements should be considered.

REFERENCES

A.F. 90490, 92828, 92902 and 92903; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

Bailes, A.H.

1980: Geology of the File Lake Area; Manitoba Energy and Mines, Mineral Resources Division, Geological Report GR78-1, 134 pp.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Zwanzig, H.V.

1995: Geology of the Dow Lake area (parts of NTS 63K/15 and 63N/2); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1995, pp. 19-23.

1996a: Geology of the Dow Lake-Martell Lake area (parts of NTS 63K/15 and 63N/2); Cancelled Assessment File, Manitoba Energy and Mines, Minerals Division, Report of Activities, 1996, pp. 21-28.

1996b: Geology of the Dow Lake-Martell Lake area (parts of NTS 63K/15 and 63N/2); Cancelled Assessment File, Manitoba Energy and Mines, Preliminary Map 1996K-1, 1:20 000.

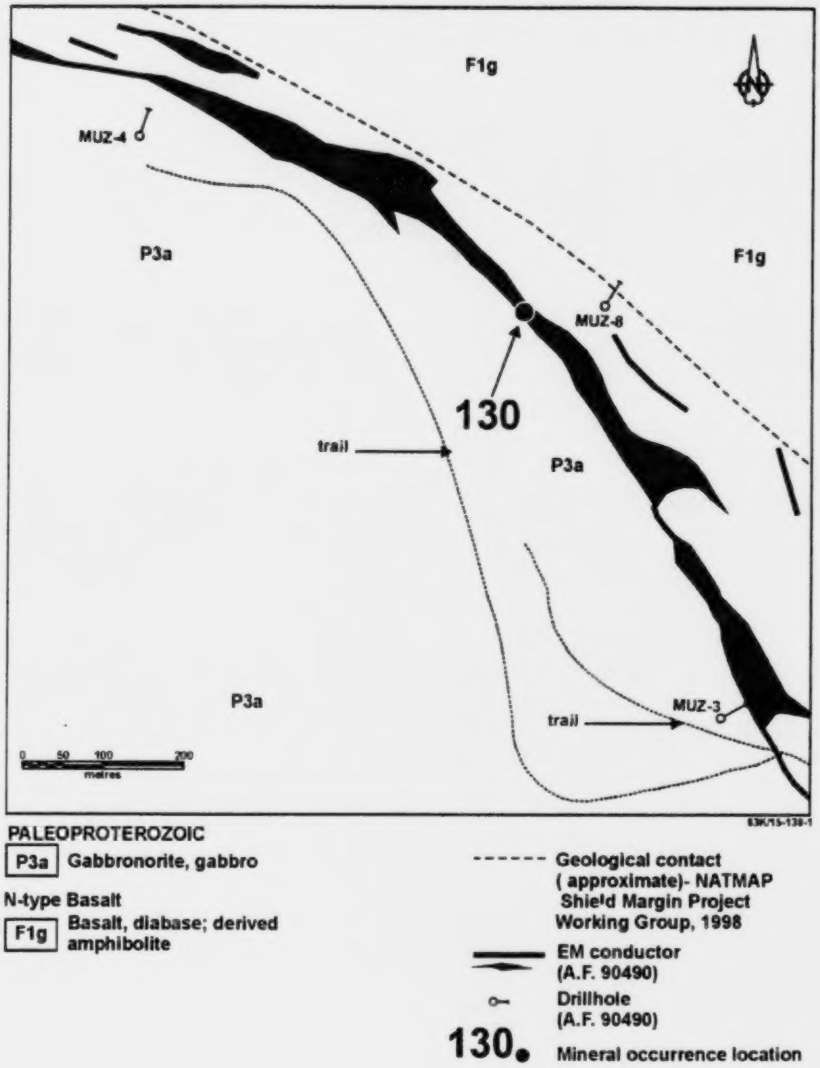

F1g
MUZ-4
P3a
F1g
MUZ-8
130
trail
P3a
P3a
trail
MUZ-3
0 50 100 200
metres
63K/15-130-1
PALEOPROTEROZOIC
P3a Gabbronorite, gabbro
N-type Basalt
F1g Basalt, diabase; derived amphibolite
Geological contact (approximate)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 90490)
Drillhole (A.F. 90490)
130 Mineral occurrence location

Figure 130-1: Geological setting of occurrence 130.

LOCATION: 131

NAME: mineralization intersected by diamond drilling
UTM: 400470E, 6091905N
AREA: approximately 1.4 km W of Loonhead Lake
ACCESS: via bush aircraft to Loonhead Lake, then traverse
AIRPHOTO: MB90024-160

EXPLORATION SUMMARY

In 1956 and 1957 Hudson Bay Exploration and Development Company, Limited performed an EM (Loop-Frame equipment) survey. Conductors delineated by this survey were drilled in 1957 and 1958 (A.F. 90490). In 1981 an airborne EM (INPUT) and magnetic survey was performed for BP Minerals Limited, followed by a geological mapping programme (A.F. 92828). In 1985 and 1986 Noko Resources Incorporated undertook a geological mapping, prospecting, and rock and soil sampling programme on their property (A.F. 92902, 92903).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 131-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by basalt, diabase, and derived amphibolite (unit F1g) with local felsic gneiss. This sequence has been intruded by a pyroxenitic metagabbro stock (unit P3a) (Zwanzig, 1995, 1996a, b). The stock is geochemically similar to the strongly differentiated Josland Lake tholeiitic gabbro intrusions (Bailes, 1980).

Hole MUZ-8 intersected a sequence consisting of hornblende-quartz±biotite±garnet schists to gneisses with minor foliated "andesite", diorite and an unspecified coarse-grained unit ("pegmatite") (A.F. 90490).

MINERALIZATION

One interval containing "near solid" pyrrhotite with minor arsenopyrite was intersected between 41.6-42.4 m (136.4-139.0 ft.) in hole MUZ-8 (A.F. 90490). It is hosted by hornblende-biotite-quartz schist.

GEOCHEMICAL DATA

No assays were reported for the mineralized intervals intersected in this hole.

CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation. Given the proximity of this occurrence to a mafic intrusion, the presence of platinum-group elements should be considered.

REFERENCES

A.F. 90490, 92828, 92902 and 92903; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

Bailes, A.H.

1980: Geology of the File Lake Area; Manitoba Energy and Mines, Mineral Resources Division, Geological Report GR78-1, 134 pp.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Zwanzig, H.V.

1995: Geology of the Dow Lake area (parts of NTS 63K/15 and 63N/2); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1995, pp. 19-23.

1996a:Geology of the Dow Lake-Martell Lake area (parts of NTS 63K/15 and 63N/2); Cancelled Assessment File, Manitoba Energy and Mines, Minerals Division, Report of Activities, 1996, pp. 21-28.

1996b: Geology of the Dow Lake-Martell Lake area (parts of NTS 63K/15 and 63N/2); Cancelled Assessment File, Manitoba Energy and Mines, Preliminary Map 1996K-1, 1:20 000.

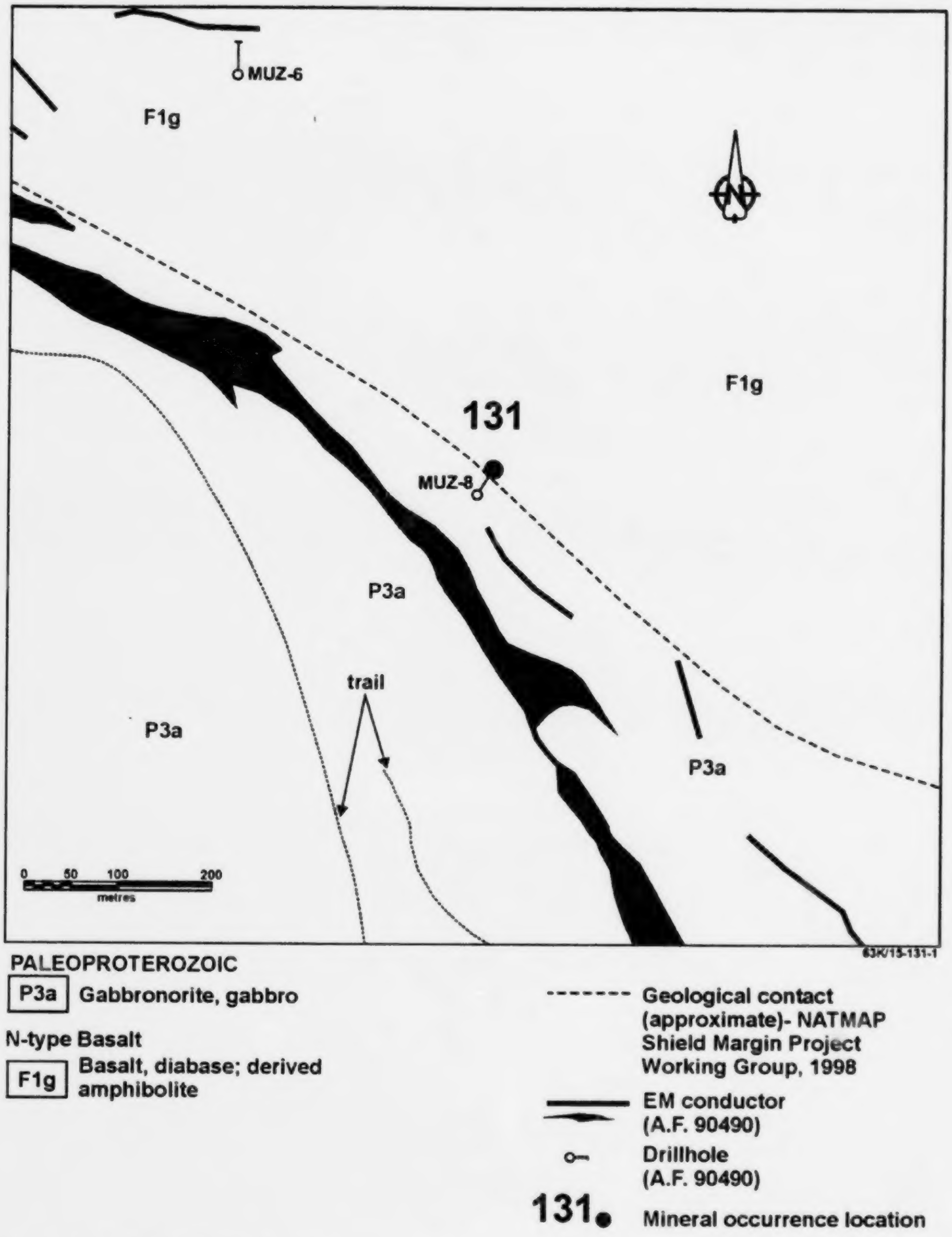

MUZ-6
F1g
131
MUZ-8
F1g
P3a
trail
P3a
P3a
0 50 100 200
metres
63K/15-131-1
PALEOPROTEROZOIC
P3a Gabbronorite, gabbro
N-type Basalt
F1g Basalt, diabase; derived amphibolite
Geological contact (approximate)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 90490)
Drillhole (A.F. 90490)
131 Mineral occurrence location

Figure 131-1: Geological setting of occurrence 131.

LOCATION: 132

NAME: mineralization intersected by diamond drilling
UTM: 400740E, 6071575N
AREA: approximately 300 m W of Sewell Lake
ACCESS: via float equipped aircraft to Sewell Lake, then traverse
AIRPHOTO: MB90026-8

EXPLORATION SUMMARY

Gränges Exploration AB performed an HLEM (ABEM GUN) survey in 1977-78 (A.F. 92443) and drilled several holes in the area in 1979 (A.F. 92441).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 132-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by basalts and andesites (unit J1d) of the Preaston formation (Bailes, 1980). These appear to be the same as the Eastern basalts of the North Star Lake area (Norquay *et al.*, 1993, 1994). In the North Star Lake area this assemblage consists of pillowed and massive basalt with abundant massive synvolcanic gabbroic units. Mafic tectonite with mafic to felsic sheets (unit W6b) of the West Reed-North Star shear zone (Syme *et al.*, 1995a, b) occurs to the west of the occurrence.

Holes C-79-35 and -39 intersected a series of chlorite±carbonate±quartz schists that appear to have been derived from variably amygdaloidal, schistose, mafic, volcanic rocks, gabbro and minor rhyolite (A.F. 92441).

MINERALIZATION

Sulphide mineralization was intersected over the following intervals (A.F. 92441) (see table below).

Hole No.	Interval	Mineralization
C-79-35	28.0-35.8 m (92.0-117.4 ft.)	5-20% pyrrhotite, to 10% pyrite, minor chalcopyrite, in quartz-chlorite-carbonate schist and schistose andesite
	38.1-38.5 m (125.0-126.4 ft.)	10% pyrite, 2% pyrrhotite, in schistose, chloritic, siliceous, calcareous andesite
	39.1-41.7 m (128.2-136.8 ft.)	10% pyrite, tr sphalerite, in quartz carbonate rock (schist?)
	43.5-45.8 m (142.6-150.1 ft.)	5-10% pyrite, in schistose, siliceous, slightly calcareous andesite
C-79-39	24.1-24.5 m (79.2-80.3 ft.)	15% pyrrhotite, tr chalcopyrite, in quartz-chlorite-carbonate schist
	24.5-25.2 m (80.3-82.6 ft.)	5% pyrrhotite, 2% pyrite, tr chalcopyrite, in quartz-chlorite-carbonate schist
	25.2-29.6 m (82.6-97.0 ft.)	5-10% pyrite, in quartz-chlorite-carbonate schist and chloritic andesite
	33.8-34.1 m (110.9-112.0 ft.)	5% pyrite, in chloritic, schistose andesite
	34.7-35.7 m (113.8-117.0 ft.)	5% pyrite, tr pyrrhotite in chloritic, schistose andesite
	46.3-46.8 m (152.0-153.6 ft.)	5% pyrite, in talc-chlorite schist

GEOCHEMICAL DATA

The following assays were obtained from the mineralized intervals (A.F. 92441) (see table on following page).

CLASSIFICATION

Massive sulphide type deposit; alteration zone. It is unclear if the schistose rocks associated with this occurrence represent an alteration zone or a more regional structural feature.

REFERENCES

A.F. 92441 and 92443; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

Bailes, A.H.

1980: Geology of the File Lake Area; Manitoba Energy and Mines, Mineral Resources Division, Geological Report GR78-1, 134 pp.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Norquay, L.I., Prouse, D.E. and Gale, G.H.

1993: Geological investigations in the North Star Lake area (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1993, pp. 78-83.

1994: The North Star Lake project (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1994, pp. 83-84.

Syme, E.C., Bailes, A.H. and Lucas, S.B.

1995a: Geology of the Reed Lake area (Parts of 63K/9 and 10); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1995, pp. 42-60.

Hole No.	Interval	%Cu	%Zn	g Au/t	g Ag/t
C-79-35	28.0-28.2 m (92.0-92.6 ft.)	0.56	0.91	0.05	1.0
	28.2-29.3 m (92.6-96.0 ft.)	0.12	0.27	0.05	0.5
	29.3-30.8 m (96.0-101.0 ft.)	0.05	0.13	0.05	0.5
	30.8-32.3 m (101.0-106.0 ft.)	0.04	0.17	0.05	0.5
	32.3-33.8 m (106.0-111.0 ft.)	0.03	0.10	0.05	0.5
	33.8-35.4 m (111.0-116.0 ft.)	0.02	0.09	0.05	0.5
	35.4-35.8 m (116.0-117.4 ft.)	0.02	0.02	0.05	0.5
	38.1-38.5 m (125.0-126.4 ft.)	0.02	0.02	0.05	0.5
	39.1-40.6 m (128.2-133.2 ft.)	0.03	0.13	0.15	0.5
	40.6-41.7 m (133.2-136.8 ft.)	0.03	0.02	0.05	0.5
	43.5-45.1 m (142.6-148.0 ft.)	0.03	0.01	0.05	0.5
	45.1-45.8 m (148.0-150.1 ft.)	0.06	0.01	0.05	1.0
C-79-39	24.1-24.5 m (79.2-80.3 ft.)	0.06	0.18	0.05	1.5
	24.5-25.2 m (80.3-82.6 ft.)	0.03	0.07	0.05	0.5
	25.2-26.5 m (82.6-87.0 ft.)	0.01	0.17	0.05	1.0
	26.5-28.0 m (87.0-92.0 ft.)	0.01	0.11	0.05	0.5
	28.0-29.6 m (92.0-97.0 ft.)	0.01	0.17	0.05	0.5
	33.8-34.1 m (110.9-112.0 ft.)	0.02	0.07	0.05	0.5
	34.7-35.7 m (113.8-117.0 ft.)	0.01	0.05	0.05	0.5
	46.3-46.8 m (152.0-153.6 ft.)	0.01	0.01	0.05	0.5

1995b: Geology of the Reed Lake area (Parts of 63K/9 and 10); Manitoba Energy and Mines, Minerals Division, Preliminary Map 1995F-1, 1:50 000.

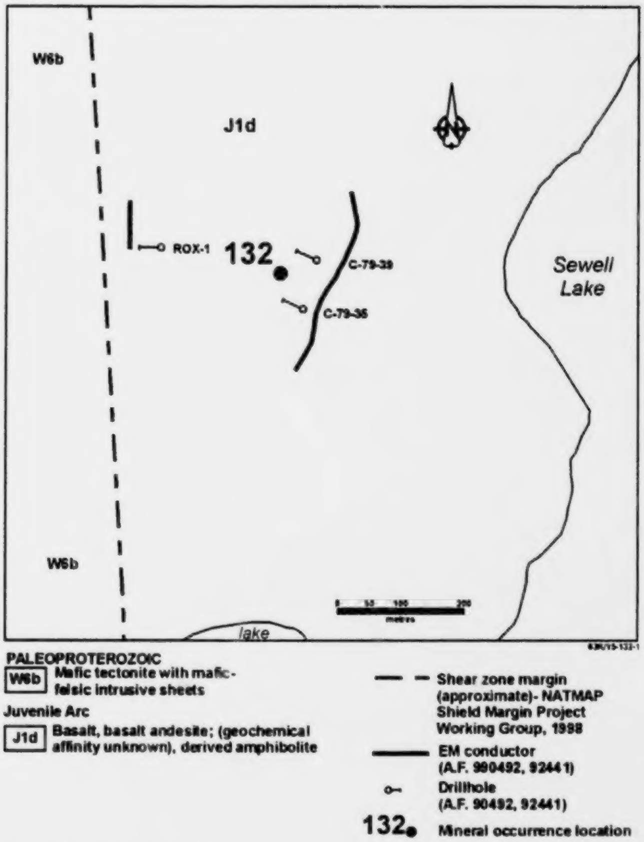

W6b
J1d
ROX-1
132
C-79-39
C-79-35
Sewell Lake
W6b
0 50 100 200
metres
lake
PALEOPROTEROZOIC
W6b Mafic tectonite with mafic-felsic intrusive sheets
Juvenile Arc
J1d Basalt, basalt andesite; (geochemical affinity unknown), derived amphibolite
Shear zone margin (approximate)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 990492, 92441)
Drillhole (A.F. 90492, 92441)
132 Mineral occurrence location

Figure 132-1: Geological setting of occurrence 132.

LOCATION: 133

NAME: mineralization intersected by diamond drilling
UTM: 401000E, 6091305N
AREA: approximately 1.1 km W of Loonhead Lake
ACCESS: via bush aircraft to Loonhead Lake, then traverse
AIRPHOTO: MB90024-161

EXPLORATION SUMMARY

In 1956 and 1957 Hudson Bay Exploration and Development Company, Limited performed an EM (Loop-Frame equipment) survey. Conductors delineated by this survey were drilled in 1957 and 1958 (A.F. 90490). In 1981 an airborne EM (INPUT) and magnetic survey was performed for BP Minerals Limited, followed by a geological mapping programme (A.F. 92828). In 1985 and 1986 Noko Resources Incorporated undertook a geological mapping, prospecting, and rock and soil sampling programme on their property (A.F. 92902, 92903).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 133-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by basalt, diabase, and derived amphibolite (unit F1g) with local felsic gneiss. This sequence has been intruded by a pyroxenitic metagabbro stock (unit P3a) (Zwanzig, 1995, 1996a, b). The stock is geochemically similar to the strongly differentiated Josland Lake tholeiitic gabbro intrusions (Bailes, 1980).

Hole MUZ-9 intersected a sequence consisting of hornblende-quartz-biotite±garnet schists to gneisses with minor siliceous feldspar porphyry and diorite (A.F. 90490).

MINERALIZATION

One interval containing "light to near solid" pyrrhotite with minor pyrite and magnetite was intersected between 59.7-62.1 m (196.0-203.8 ft.) in hole MUZ-9 (A.F. 90490). It is hosted by quartz-biotite schist.

GEOCHEMICAL DATA

No assays were reported for the mineralized intervals intersected in this hole.

CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation. Given the proximity of this occurrence to a mafic intrusion, the presence of platinum-group elements should be considered.

REFERENCES

A.F. 90490, 92828, 92902 and 92903; Cancelled Assessment File, Manitoba Industry, Trade and Mines, Minerals Division.

Bailes, A.H.

1980: Geology of the File Lake Area; Manitoba Energy and Mines, Mineral Resources Division, Geological Report GR78-1, 134 pp.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Zwanzig, H.V.

1995: Geology of the Dow Lake area (parts of NTS 63K/15 and 63N/2); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1995, pp. 19-23.

1996a: Geology of the Dow Lake-Martell Lake area (parts of NTS 63K/15 and 63N/2); Cancelled Assessment File, Manitoba Energy and Mines, Minerals Division, Report of Activities, 1996, pp. 21-28.

1996b: Geology of the Dow Lake-Martell Lake area (parts of NTS 63K/15 and 63N/2); Cancelled Assessment File, Manitoba Energy and Mines, Preliminary Map 1996K-1, 1:20 000.

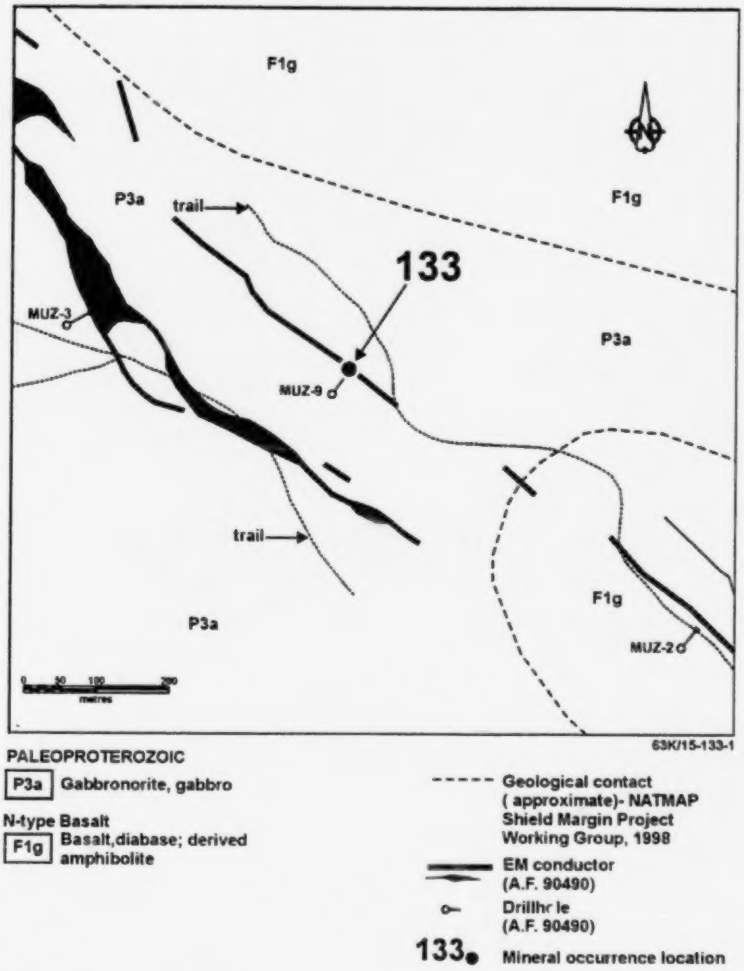

F1g
F1g
P3a
trail
133
MUZ-3
MUZ-9
P3a
trail
F1g
P3a
MUZ-2
0 50 100 200
metres
63K/15-133-1
PALEOPROTEROZOIC
P3a Gabbronorite, gabbro
N-type Basalt
F1g Basalt,diabase; derived amphibolite
Geological contact (approximate)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 90490)
Drillhole (A.F. 90490)
133 Mineral occurrence location

Figure 133-1: Geological setting of occurrence 133.

LOCATION: 134

NAME: mineralization intersected by diamond drilling
UTM: 401480E, 6090960N
AREA: approximately 500 m W of Loonhead Lake
ACCESS: via bush aircraft to Loonhead Lake, then traverse
AIRPHOTO: MB90024-161

EXPLORATION SUMMARY

In 1956 and 1957 Hudson Bay Exploration and Development Company, Limited performed an EM (Loop-Frame equipment) survey. Conductors delineated by this survey were drilled in 1957 and 1958 (A.F. 90490). In 1981 an airborne EM (INPUT) and magnetic survey was performed for BP Minerals Limited, followed by a geological mapping programme (A.F. 92828). In 1985 and 1986 Noko Resources Incorporated undertook a geological mapping, prospecting, and rock and soil sampling programme on their property (A.F. 92902, 92903).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 134-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by basalt, diabase, and derived amphibolite (unit F1g) with local felsic gneiss. This sequence has been intruded by a pyroxenitic metagabbro stock (unit P3a) (Zwanzig, 1995, 1996a, b). The stock is geochemically similar to the strongly differentiated Josland Lake tholeiitic gabbro intrusions (Bailes, 1980).

Hole MUZ-2 intersected a sequence consisting of hornblende-quartz±biotite±garnet±chlorite gneisses with minor granitic pegmatite, hornblende "andesite" and diorite (A.F. 90490).

MINERALIZATION

One interval that is "well mineralized to near solid" pyrite and pyrrhotite was intersected between 62.0-70.4 m (203.3-231.0 ft.) in hole MUZ-2 (A.F. 90490). It is hosted by hornblende-biotite gneiss to schist.

GEOCHEMICAL DATA

No assays were reported for the mineralized intervals intersected in this hole.

CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation.

REFERENCES

A.F. 90490, 92828, 92902 and 92903; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

Bailes, A.H.

1980: Geology of the File Lake Area; Manitoba Energy and Mines, Mineral Resources Division, Geological Report GR78-1, 134 pp.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Zwanzig, H.V.

1995: Geology of the Dow Lake area (parts of NTS 63K/15 and 63N/2); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1995, pp. 19-23.

1996a: Geology of the Dow Lake-Martell Lake area (parts of NTS 63K/15 and 63N/2); Cancelled Assessment File, Manitoba Energy and Mines, Minerals Division, Report of Activities, 1996, pp. 21-28.

1996b: Geology of the Dow Lake-Martell Lake area (parts of NTS 63K/15 and 63N/2); Cancelled Assessment File, Manitoba Energy and Mines, Preliminary Map 1996K-1, 1:20 000.

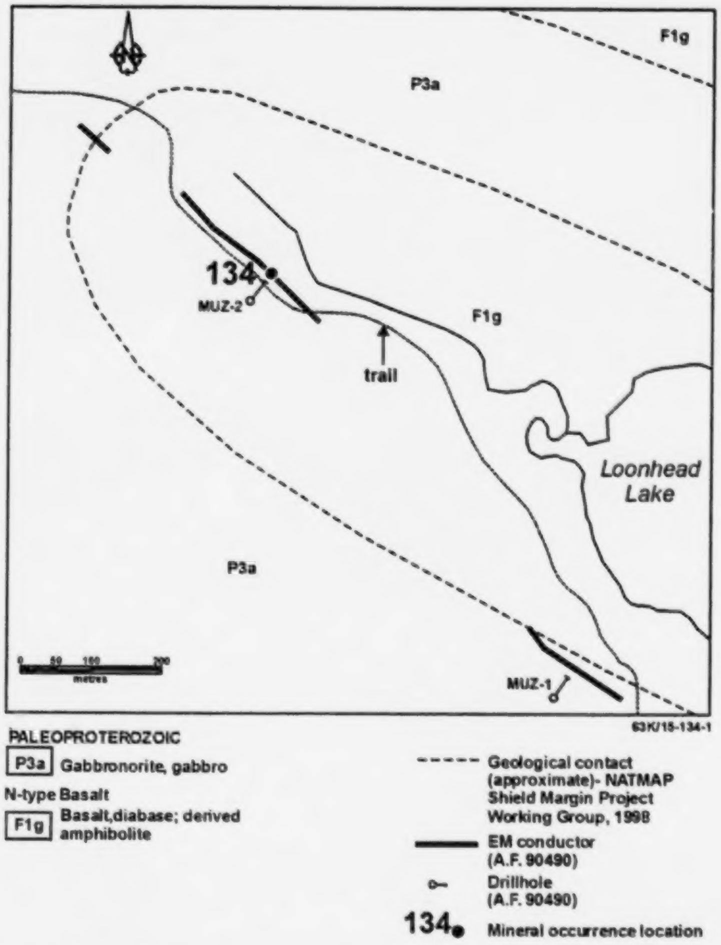

F1g
P3a
134
MUZ-2
F1g
trail
Loonhead Lake
P3a
0 50 100 200
metres
MUZ-1
63K/15-134-1
PALEOPROTEROZOIC
P3a Gabbronorite, gabbro
N-type Basalt
F1g Basalt,diabase; derived amphibolite
Geological contact (approximate)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 90490)
Drillhole (A.F. 90490)
134 Mineral occurrence location

Figure 134-1: Geological setting of occurrence 134.

LOCATION: 135

NAME: mineralization intersected by diamond drilling
UTM: 401920E, 6090405N
AREA: approximately 200 m SW of southwest corner of Loonhead Lake
ACCESS: via bush aircraft to Loonhead Lake, then traverse
AIRPHOTO: MB90024-149

EXPLORATION SUMMARY

In 1956 and 1957 Hudson Bay Exploration and Development Company, Limited performed an EM (Loop-Frame equipment) survey. Conductors delineated by this survey were drilled in 1957 and 1958 (A.F. 90490). In 1981 an airborne EM (INPUT) and magnetic survey was performed for BP Minerals Limited, followed by a geological mapping programme (A.F. 92828). In 1985 and 1986 Noko Resources Incorporated undertook geological mapping, prospecting, and rock and soil sampling programmes on their property (A.F. 92902, 92903).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 135-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by basalt, diabase, and derived amphibolite (unit F1g) with local felsic gneiss. This sequence has been intruded by a pyroxenitic metagabbro stock (unit P3a) (Zwanzig, 1995, 1996a, b). The stock is geochemically similar to the strongly differentiated Josland Lake tholeiitic gabbro intrusions (Bailes, 1980).

Hole MUZ-1 intersected a sequence consisting of hornblende-quartz-plagioclase±garnet gneisses (A.F. 90490).

MINERALIZATION

Several intervals containing "considerable" pyrrhotite and lesser pyrite were intersected in hole MUZ-1 over the following intervals (A.F. 90490) (see table below).

Interval	Mineralization
36.9-38.7 m (121.0-127.0 ft.)	"considerable" pyrrhotite, "very slight" pyrite, in siliceous hornblende-plagioclase gneiss
54.6-66.4 m (179.2-218.0 ft.)	"considerable" pyrrhotite and pyrite, in siliceous hornblende-plagioclase-garnet gneiss
80.2-83.2 m (263.0-273.0 ft.)	"considerable" pyrrhotite, "slight" pyrite, in quartz-plagioclase-hornblende gneiss

GEOCHEMICAL DATA

No assays were reported for the mineralized intervals intersected in this hole.

CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation. Given the proximity of this occurrence to a mafic intrusion, the presence of platinum-group elements should be considered.

REFERENCES

A.F. 90490, 92828, 92902 and 92903; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

Bailes, A.H.

1980: Geology of the File Lake Area; Manitoba Energy and Mines, Mineral Resources Division, Geological Report GR78-1, 134 pp.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Zwanzig, H.V.

1995: Geology of the Dow Lake area (parts of NTS 63K/15 and 63N/2); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1995, pp. 19-23.

1996a: Geology of the Dow Lake-Martell Lake area (parts of NTS 63K/15 and 63N/2); Cancelled Assessment File, Manitoba Energy and Mines, Minerals Division, Report of Activities, 1996, pp. 21-28.

1996b: Geology of the Dow Lake-Martell Lake area (parts of NTS 63K/15 and 63N/2); Cancelled Assessment File, Manitoba Energy and Mines, Preliminary Map 1996K-1, 1:20 000.

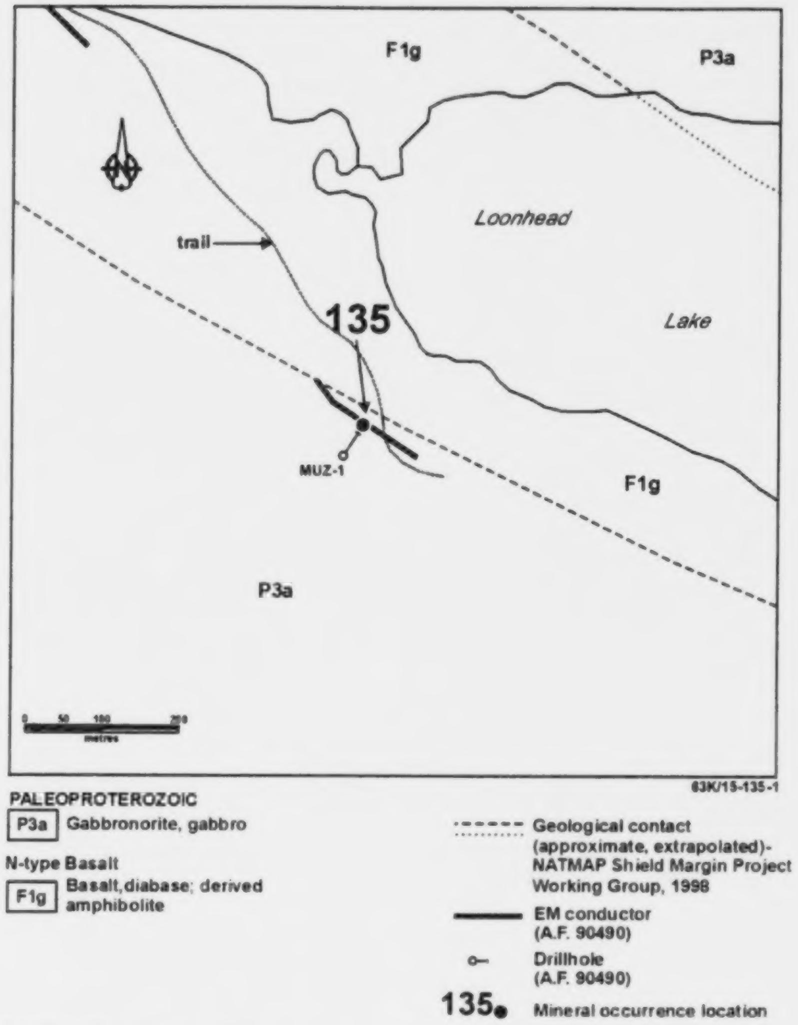

F1g
P3a
Loonhead
Lake
trail
135
MUZ-1
F1g
P3a
0 50 100 200
metres
63K/15-135-1
PALEOPROTEROZOIC
P3a Gabbronorite, gabbro
N-type Basalt
F1g Basalt, diabase; derived amphibolite
Geological contact (approximate, extrapolated)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 90490)
Drillhole (A.F. 90490)
135 Mineral occurrence location

Figure 135-1: Geological setting of occurrence 135.

LOCATION: 136

NAME: mineralization intersected by diamond drilling
UTM: 400490E, 6072435N
AREA: approximately 700 m SW of Preaston Lake
ACCESS: via abandoned CNR rail roadbed from Snow Lake, along Dickstone mine road, then traverse
AIRPHOTO: MB90026-8

EXPLORATION SUMMARY

In 1957 Hudson Bay Exploration and Development Company, Limited performed an EM (loop-frame) survey in the Sewell Lake-Peterson Lake area (A.F. 90497), after which several of the conductors were drill tested (A.F. 91544).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 136-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by flow basalts and andesites (unit J1d) of the Preaston formation (Bailes, 1980). These appear to be the same as the Eastern basalts of the North Star Lake area (Norquay *et al.*, 1993, 1994). In the North Star Lake area this assemblage consists of pillowed and massive basalt flows with abundant massive synvolcanic gabbroic units.

The sequence intersected by holes ROX-3 and -8 is dominated by foliated, mafic, volcanic rock and derived banded chlorite±quartz±garnet±magnetite schists (A.F. 91544). Some of the quartz-bearing schist intervals may have been derived from felsic volcanic or intrusive rocks.

MINERALIZATION

Sulphide mineralization was intersected over the following intervals (A.F. 92441) (see table below).

Hole No.	Interval	Mineralization
ROX-3	48.3-49.2 m (158.6-161.4 ft.)	"well mineralized" pyrrhotite, minor pyrite, with graphitic bands in banded schistose, chloritic "andesite" and chlorite schist
	50.4-51.0 m (165.2-167.4 ft.)	"well mineralized" pyrrhotite, minor pyrite, with graphitic bands in banded schistose, chloritic "andesite" and chlorite schist
ROX-8	97.9-98.3 m (321.3-322.4 ft.)	"well mineralized" pyrite and graphite, tr chalcopyrite, in chlorite schist

GEOCHEMICAL DATA

No assays were reported in the assessment files for the mineralized intervals intersected by these holes.

CLASSIFICATION

Massive sulphide type deposit; alteration zone. It is unclear if the schistose and chloritic intervals represent a tectonized hydrothermal alteration zone or a more regional structural feature. The presence of graphite indicates a biogenic component.

REFERENCES

A.F. 90497 and 91544; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Energy and Minerals Division

Bailes, A.H.

1980: Geology of the File Lake Area; Manitoba Energy and Mines, Mineral Resources Division, Geological Report GR78-1, 134 pp.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Norquay, L.I., Prouse, D.E. and Gale, G.H.

1993: Geological investigations in the North Star Lake area (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1993, pp. 78-83.

1994: The North Star Lake project (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1994, pp. 83-84.

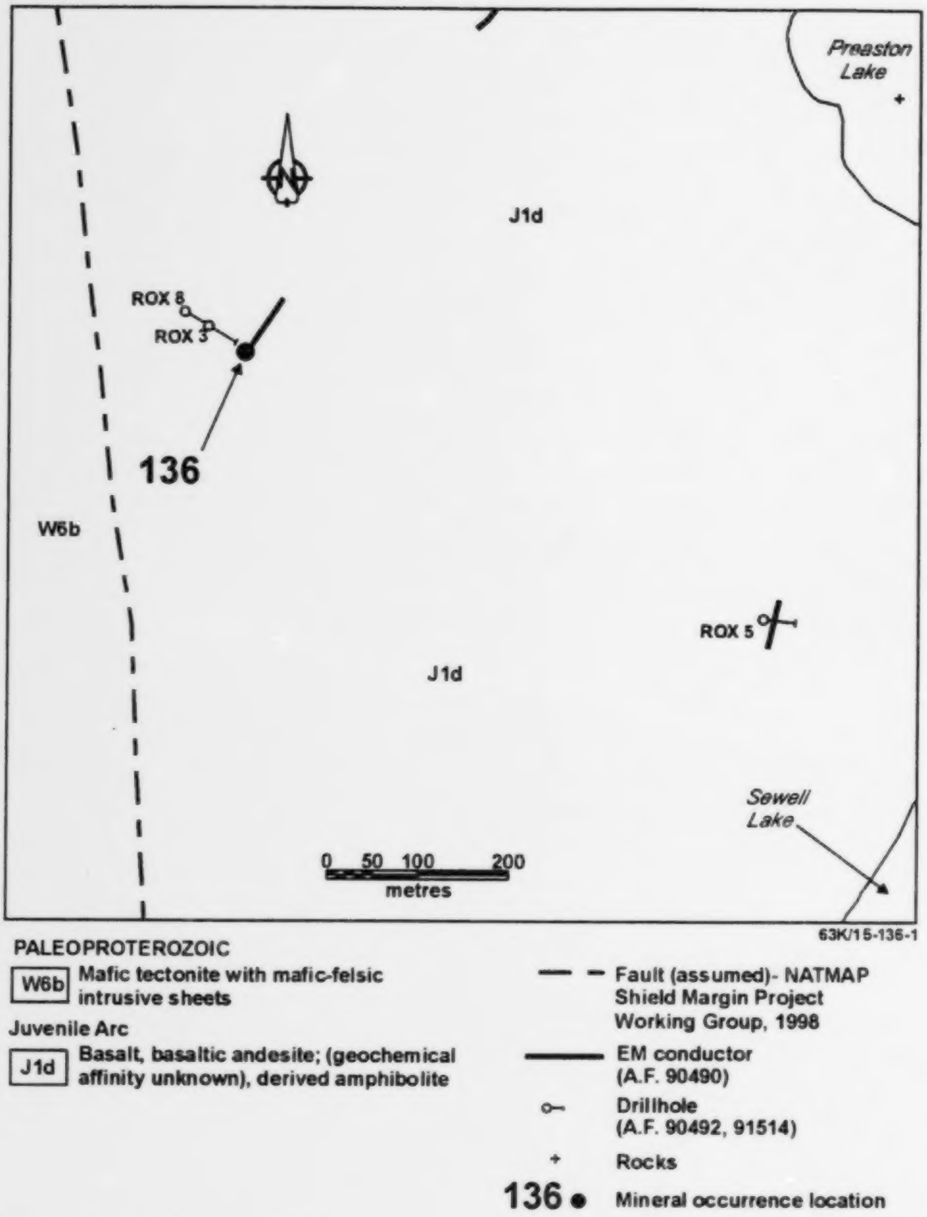

Preaston Lake
J1d
ROX 8
ROX 3
136
W6b
ROX 5
J1d
Sewell Lake
0 50 100 200
metres
63K/15-136-1
PALEOPROTEROZOIC
W6b Mafic tectonite with mafic-felsic intrusive sheets
Juvenile Arc
J1d Basalt, basaltic andesite; (geochemical affinity unknown), derived amphibolite
Fault (assumed)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 90490)
Drillhole (A.F. 90492, 91514)
Rocks
136 Mineral occurrence location

Figure 136-1: Geological setting of occurrence 136.

LOCATION: 137

NAME: mineralization intersected by diamond drilling
UTM: 397390E, 6089255N
AREA: approximately 4.8 km WSW of Loonhead Lake
ACCESS: via bush aircraft to Loonhead Lake, then traverse
AIRPHOTO: MB90026-32

EXPLORATION SUMMARY

In 1962 Hudson Bay Exploration and Development Company, Limited drilled several holes to test EM conductors in the occurrence area (A.F. 90492). In 1981 an airborne EM (INPUT) and magnetic survey was performed for BP Minerals Limited, followed by a geological mapping programme (A.F. 92828).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 137-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by foliated and gneissic granodiorite to tonalite (unit P7e). Mapping by Norquay *et al.* (1991, 1994a, b) indicated that the area is underlain by undifferentiated Gants Lake batholith contact aureole schists. The aureole in this area is up to 700 m thick and is imposed upon intermediate to felsic metavolcanic, and possibly metasedimentary, rocks. This sequence has undergone varying degrees of partial melting, *lit-par-lit* injection of granodioritic material, recrystallization and intrusion by granodioritic to aplitic dykes. The foliation tends to be irregular.

Hole TUG-251 intersected quartz-sericite±graphite±garnet schist with two highly graphitic intervals. The upper graphitic zone is staurolitic (A.F. 90492).

MINERALIZATION

Two graphitic intervals, "well mineralized" with pyrite and minor chalcopyrite, were intersected in hole TUG-251 between 22.4-26.1 m (73.5-85.5 ft.) and 27.4-28.7 m (90.0-94.0 ft.) (A.F. 90492).

GEOCHEMICAL DATA

No assays were reported for the mineralized intervals intersected in this hole.

CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation. The sulphides have probably been extensively recrystallized as this mineralization occurs within the Gants Lake batholith contact aureole. The presence of graphite suggests a biogenic contribution.

REFERENCES

A.F. 90492 and 92828; Cancelled Assessment File, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Norquay, L.I., Prouse, D.E., Bieri, M. and Gale, G.H.

1991: Geology of a part of the North Star Lake area (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1991, pp. 31-40.

Norquay, L.I., Prouse, D.E., and Gale, G.H.

1994a: The North Star Lake project (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1994, pp. 83-84.

1994b: North Star Lake (NTS 63K/15NE1); Manitoba Energy and Mines, Minerals Division, Preliminary Map 1994S-2, 1:10 000.

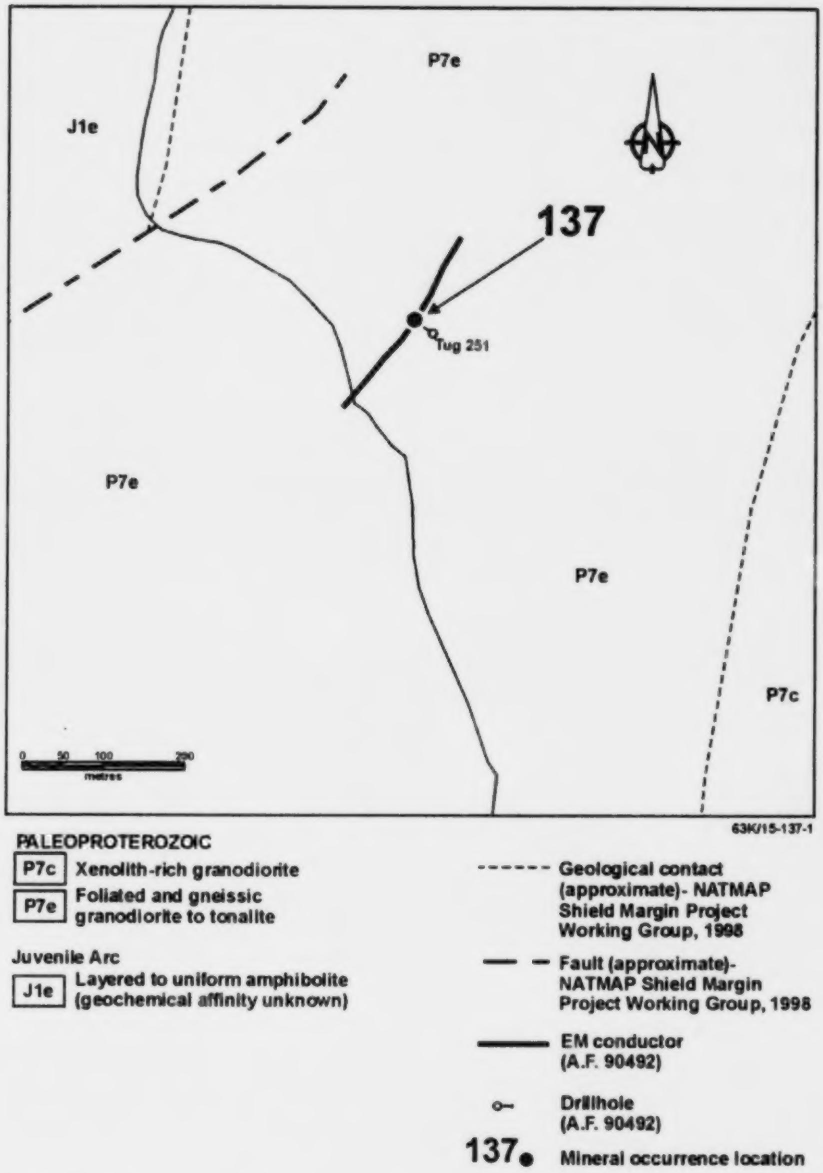

P7e
J1e
137
Tug 251
P7e
P7e
P7c
0 50 100 200
metres
63K/15-137-1
PALEOPROTEROZOIC
P7c Xenolith-rich granodiorite
P7e Foliated and gneissic granodiorite to tonalite
Juvenile Arc
J1e Layered to uniform amphibolite (geochemical affinity unknown)
Geological contact (approximate)- NATMAP Shield Margin Project Working Group, 1998
Fault (approximate)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 90492)
Drillhole (A.F. 90492)
137● Mineral occurrence location

Figure 137-1: Geological setting of occurrence 137.

LOCATION: 138

NAME: mineralization intersected by diamond drilling
UTM: 398570E, 6090255N
AREA: approximately 3.4 km W of Loonhead Lake
ACCESS: via bush aircraft to Loonhead Lake, then traverse
AIRPHOTO: MB90024-162

EXPLORATION SUMMARY

In 1956 and 1957 Hudson Bay Exploration and Development Company, Limited performed an EM (Loop-Frame equipment) survey. Conductors delineated by this survey were drilled in 1957 and 1958 (A.F. 90490). In 1981 an airborne EM (INPUT) and magnetic survey was performed for BP Minerals Limited, followed by a geological mapping programme (A.F. 92828).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 138-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by basalt, basaltic andesite, and derived amphibolite (unit J1d) with local felsic gneiss. This sequence has been intruded by a pyroxenitic metagabbro stock (unit P3a) (Zwanzig, 1995, 1996a, b). The stock is geochemically similar to the strongly differentiated Josland Lake tholeiitic gabbro intrusions (Bailes, 1980). To the south the area is underlain by hornblendite (unit J1e) which may extend into the occurrence area (Norquay *et al.*, 1994a, b). The eastern margin of the Gants Lake Batholith (unit P7e) is located a short distance from the occurrence.

Hole MUZ-17 intersected a sequence composed of quartz-hornblende-biotite±garnet gneisses, chloritic diorite and biotite granite (A.F. 90490).

MINERALIZATION

Hole MUZ-17 intersected a single sulphide-rich interval from 53.4-59.0 m (175.3-193.7 ft.) containing "very slight to near solid" pyrite and pyrrhotite with minor chalcopyrite (A.F. 90490). The host rock is garnet-hornblende-biotite gneiss.

GEOCHEMICAL DATA

No assays were reported for the mineralized interval intersected in this hole.

CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation.

REFERENCES

A.F. 90490 and 92828; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

Bailes, A.H.

1980: Geology of the File Lake Area; Manitoba Energy and Mines, Mineral Resources Division, Geological Report GR78-1, 134 pp.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Norquay, L.I., Prouse, D.E., and Gale, G.H.

1994a: The North Star Lake project (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1994, pp. 83-84.

1994b: North Star Lake (NTS 63K/15NE1); Cancelled Assessment File, Manitoba Industry, Trade and Mines, Minerals Division, Preliminary Map 1994S-2, 1:10 000.

Zwanzig, H.V.

1995: Geology of the Dow Lake area (parts of NTS 63K/15 and 63N/2); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1995, pp. 19-23.

1996a: Geology of the Dow Lake-Martell Lake area (parts of NTS 63K/15 and 63N/2); Cancelled Assessment File, Manitoba Energy and Mines, Minerals Division, Report of Activities, 1996, pp. 21-28.

1996b: Geology of the Dow Lake-Martell Lake area (parts of NTS 63K/15 and 63N/2); Cancelled Assessment File, Manitoba Energy and Mines, Preliminary Map 1996K-1, 1:20 000.

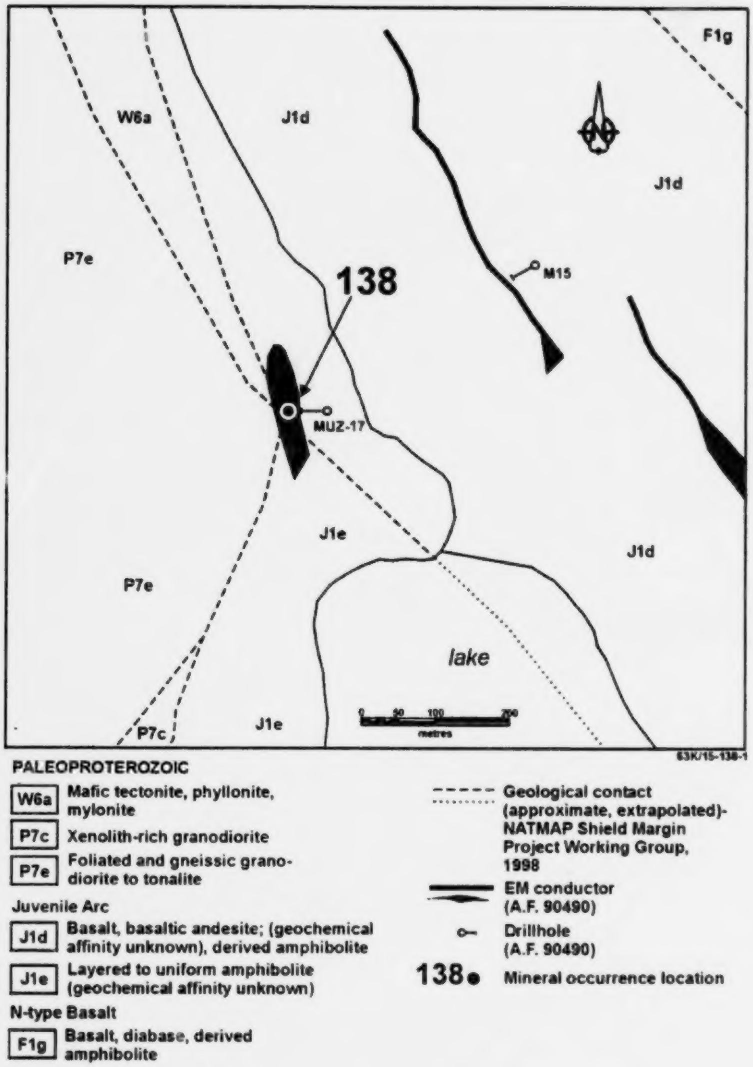

F1g
W6a
J1d
J1d
P7e
138
M15
MUZ-17
J1e
J1d
P7e
lake
P7c
J1e
0
50
100
200
metres
63K/15-138-1
PALEOPROTEROZOIC
W6a Mafic tectonite, phyllonite, mylonite
P7c Xenolith-rich granodiorite
P7e Foliated and gneissic granodiorite to tonalite
Juvenile Arc
J1d Basalt, basaltic andesite; (geochemical affinity unknown), derived amphibolite
J1e Layered to uniform amphibolite (geochemical affinity unknown)
N-type Basalt
F1g Basalt, diabase, derived amphibolite
Geological contact (approximate, extrapolated)-NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 90490)
Drillhole (A.F. 90490)
138● Mineral occurrence location

Figure 138-1: Geological setting of occurrence 138.

LOCATION: 139

NAME: mineralization intersected by diamond drilling
UTM: 398860E, 6090435N
AREA: approximately 3.1 km W of Loonhead Lake
ACCESS: via bush aircraft to Loonhead Lake, then traverse
AIRPHOTO: MB90024-162

EXPLORATION SUMMARY

In 1956 and 1957 Hudson Bay Exploration and Development Company, Limited performed an EM (Loop-Frame equipment) survey. Conductors delineated by this survey were drilled in 1957 and 1958 (A.F. 90490). In 1981 an airborne EM (INPUT) and magnetic survey was performed for BP Minerals Limited, followed by a geological mapping programme (A.F. 92828).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 139-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by basalt, diabase, and derived amphibolite (unit F1g) with local felsic gneiss. This sequence has been intruded by a pyroxenitic metagabbro stock (unit P3a) (Zwanzig, 1995, 1996a, b). The stock is geochemically similar to the strongly differentiated Josland Lake tholeiitic gabbro intrusions (Bailes, 1980). To the south the area is underlain by hornblendite (unit J1e) which may extend into the occurrence area (Norquay *et al.*, 1994a, b).

Hole MUZ-15 intersected a sequence of quartz-hornblende-biotite±garnet gneiss, "quartzite" (rhyolite?), chloritic "andesite" and quartz-feldspar gneiss (A.F. 90490).

MINERALIZATION

A "quartzite" intersected between 48.2-53.4 m (158.1-175.2 ft.) in hole MUZ-15 contains several thin "near solid" intervals of pyrite with minor pyrrhotite (A.F. 90490).

GEOCHEMICAL DATA

No assays were reported for the mineralized interval intersected in this hole.

CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation.

REFERENCES

A.F. 90490 and 92828; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

Bailes, A.H.

1980: Geology of the File Lake Area; Manitoba Energy and Mines, Mineral Resources Division, Geological Report GR78-1, 134 pp.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Norquay, L.I., Prouse, D.E., and Gale, G.H.

1994a: The North Star Lake project (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1994, pp. 83-84.

1994b: North Star Lake (NTS 63K/15NE1); Cancelled Assessment File, Manitoba Industry, Trade and Mines, Minerals Division, Preliminary Map 1994S-2, 1:10 000.

Zwanzig, H.V.

1995: Geology of the Dow Lake area (parts of NTS 63K/15 and 63N/2); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1995, pp. 19-23.

1996a: Geology of the Dow Lake-Martell Lake area (parts of NTS 63K/15 and 63N/2); Cancelled Assessment File, Manitoba Energy and Mines, Minerals Division, Report of Activities, 1996, pp. 21-28.

1996b: Geology of the Dow Lake-Martell Lake area (parts of NTS 63K/15 and 63N/2); Cancelled Assessment File, Manitoba Energy and Mines, Preliminary Map 1996K-1, 1:20 000.

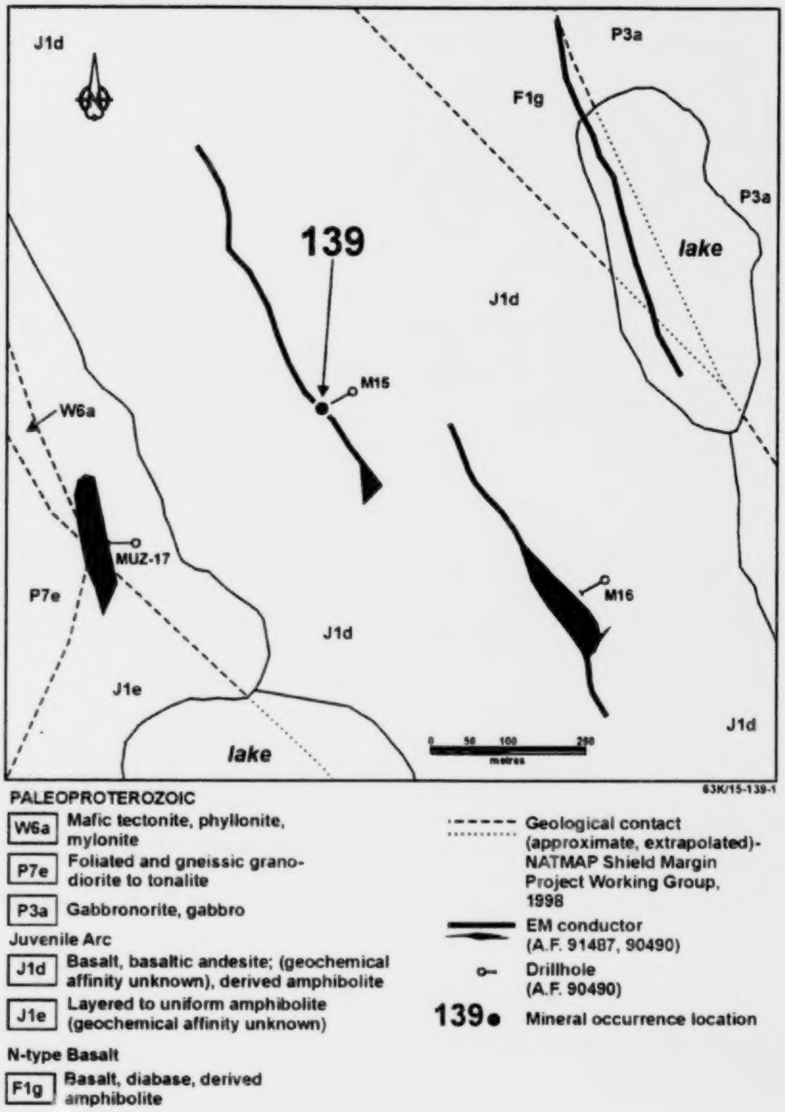

J1d
P3a
F1g
P3a
139
lake
J1d
M15
W6a
MUZ-17
P7e
M16
J1d
J1e
lake
J1d
0 50 100 200
metres
63K/15-139-1
PALEOPROTEROZOIC
W6a Mafic tectonite, phyllonite, mylonite
P7e Foliated and gneissic granodiorite to tonalite
P3a Gabbronorite, gabbro
Juvenile Arc
J1d Basalt, basaltic andesite; (geochemical affinity unknown), derived amphibolite
J1e Layered to uniform amphibolite (geochemical affinity unknown)
N-type Basalt
F1g Basalt, diabase, derived amphibolite
Geological contact (approximate, extrapolated)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 91487, 90490)
Drillhole (A.F. 90490)
139● Mineral occurrence location

Figure 139-1: Geological setting of occurrence 139.

LOCATION: 140

NAME: mineralization intersected by diamond drilling
UTM: 399190E, 6090215N
AREA: approximately 2.8 km W of Loonhead Lake
ACCESS: via bush aircraft to Loonhead Lake, then traverse
AIRPHOTO: MB90024-162

EXPLORATION SUMMARY

In 1956 and 1957 Hudson Bay Exploration and Development Company, Limited performed an EM (Loop-Frame equipment) survey. Conductors delineated by this survey were drilled in 1957 and 1958 (A.F. 90490). In 1981 an airborne EM (INPUT) and magnetic survey was performed for BP Minerals Limited, followed by a geological mapping programme (A.F. 92828).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 140-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by basalt, diabase, and derived amphibolite (unit F1g) with local felsic gneiss. This sequence has been intruded by a pyroxenitic metagabbro stock (unit P3a) (Zwanzig, 1995, 1996a, b). The stock is geochemically similar to the strongly differentiated Josland Lake tholeiitic gabbro intrusions (Bailes, 1980). To the south the area is underlain by hornblendite (unit J1e) which may extend into the occurrence area (Norquay *et al.*, 1994a, b).

Hole M-16 intersected a sequence of hornblende-biotite±quartz±garnet gneisses, rhyolite, hornblende andesite and hornblende diorite (A.F. 90490).

MINERALIZATION

Two mineralized intervals containing pyrrhotite and pyrite with minor sphalerite were intersected in hole M-16 between 44.6-44.8 m (146.2-147.0 ft.) and 68.5-68.7 m (224.9-225.4 ft.) (A.F. 90490). They are hosted by hornblende-biotite gneiss that has siliceous and chloritic intervals.

GEOCHEMICAL DATA

No assays were reported for the mineralized intervals intersected in this hole.

CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation.

REFERENCES

A.F. 90490 and 92828; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

Bailes, A.H.

1980: Geology of the File Lake Area; Manitoba Energy and Mines, Mineral Resources Division, Geological Report GR78-1, 134 pp.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Norquay, L.I., Prouse, D.E., and Gale, G.H.

1994a: The North Star Lake project (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1994, pp. 83-84.

1994b: North Star Lake (NTS 63K/15NE1); Cancelled Assessment File, Manitoba Industry, Trade and Mines, Minerals Division, Preliminary Map 1994S-2, 1:10 000.

Zwanzig, H.V.

1995: Geology of the Dow Lake area (parts of NTS 63K/15 and 63N/2); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1995, pp. 19-23.

1996a: Geology of the Dow Lake-Martell Lake area (parts of NTS 63K/15 and 63N/2); Cancelled Assessment File, Manitoba Energy and Mines, Minerals Division, Report of Activities, 1996, pp. 21-28.

1996b:Geology of the Dow Lake-Martell Lake area (parts of NTS 63K/15 and 63N/2); Cancelled Assessment File, Manitoba Energy and Mines, Preliminary Map 1996K-1, 1:20 000.

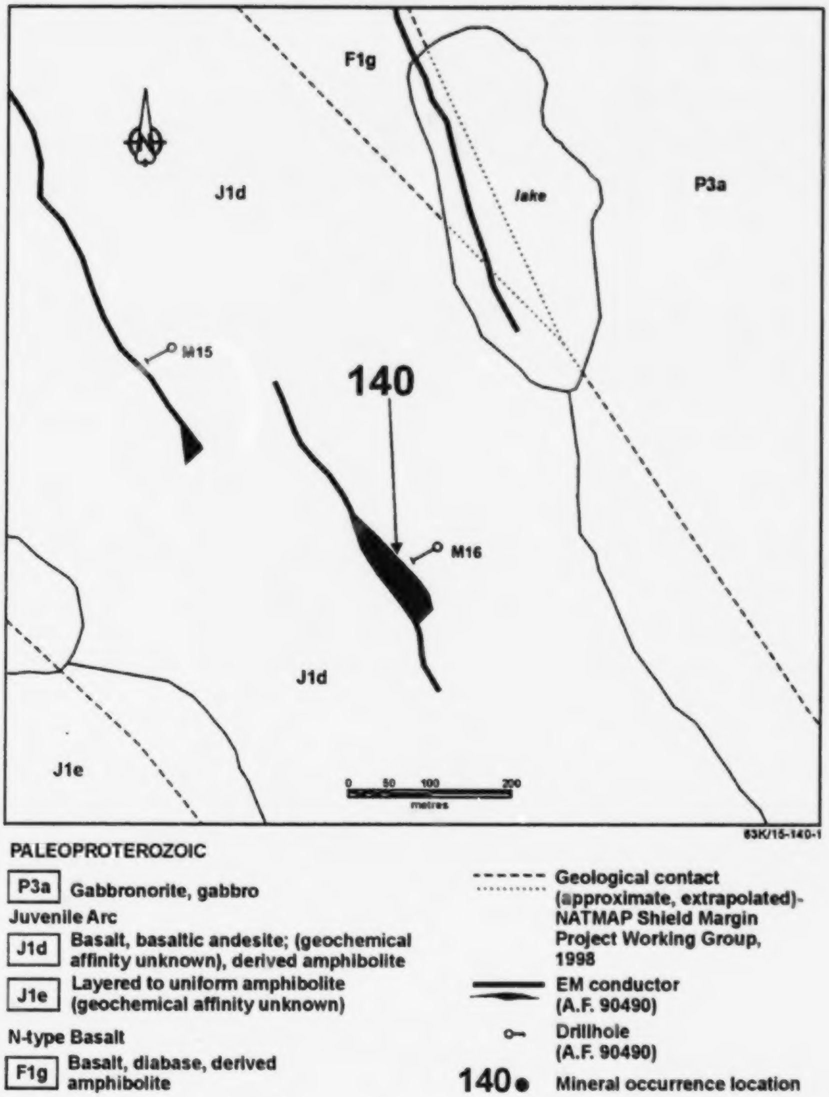

F1g
J1d
lake
P3a
M15
140
M16
J1d
J1e
0 50 100 200
metres
63K/15-140-1
PALEOPROTEROZOIC
P3a Gabbronorite, gabbro
Juvenile Arc
J1d Basalt, basaltic andesite; (geochemical affinity unknown), derived amphibolite
J1e Layered to uniform amphibolite (geochemical affinity unknown)
N-type Basalt
F1g Basalt, diabase, derived amphibolite
Geological contact (approximate, extrapolated)-NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 90490)
Drillhole (A.F. 90490)
140● Mineral occurrence location

Figure 140-1: Geological setting of occurrence 140.

LOCATION: 141

NAME: mineralization intersected by diamond drilling
UTM: 400710E, 6089645N
AREA: approximately 1.6 km SW of Loonhead Lake
ACCESS: via bush aircraft to Loonhead Lake, then traverse
AIRPHOTO: MB90024-162

EXPLORATION SUMMARY

In 1956 and 1957 Hudson Bay Exploration and Development Company, Limited performed an EM (Loop-Frame equipment) survey. Conductors delineated by this survey were drilled in 1957 and 1958 (A.F. 90490). In 1981 an airborne EM (INPUT) and magnetic survey was performed for BP Minerals Limited, followed by a geological mapping programme (A.F. 92828).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 141-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by basalt, diabase, and derived amphibolite (unit F1g) with local felsic gneiss. This sequence has been intruded by a pyroxenitic metagabbro stock (unit P3a) (Zwanzig, 1995, 1996a, b). The stock is geochemically similar to the strongly differentiated Josland Lake tholeiitic gabbro intrusions (Bailes, 1980).

Hole M-13 intersected diorite and a sequence of quartz-hornblende±biotite schists (A.F. 90490).

MINERALIZATION

Three mineralized intervals were intersected in hole MUZ-13 as follows (A.F. 90490) (see table below).

Interval	Mineralization
57.2-58.5 m (187.8-191.9 ft.)	"slight to near solid" pyrrhotite, minor pyrite, in quartz-hornblende-biotite schist
63.2-63.7 m (207.5-208.9 ft.)	"solid" pyrrhotite, minor pyrite, in quartz-hornblende-biotite schist
64.0-64.4 m (210.1-211.4 ft.)	"near solid" pyrrhotite, minor pyrite, in quartz-hornblende±biotite schist

GEOCHEMICAL DATA

No assays were reported for the mineralized intervals intersected in this hole.

CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation.

REFERENCES

A.F. 90490 and 92828; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

Bailes, A.H.

1980: Geology of the File Lake Area; Manitoba Energy and Mines, Mineral Resources Division, Geological Report GR78-1, 134 pp.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Zwanzig, H.V.

1995: Geology of the Dow Lake area (parts of NTS 63K/15 and 63N/2); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1995, pp. 19-23.

1996a: Geology of the Dow Lake-Martell Lake area (parts of NTS 63K/15 and 63N/2); Cancelled Assessment File, Manitoba Energy and Mines, Minerals Division, Report of Activities, 1996, pp. 21-28.

1996b: Geology of the Dow Lake-Martell Lake area (parts of NTS 63K/15 and 63N/2); Cancelled Assessment File, Manitoba Energy and Mines, Preliminary Map 1996K-1, 1:20 000.

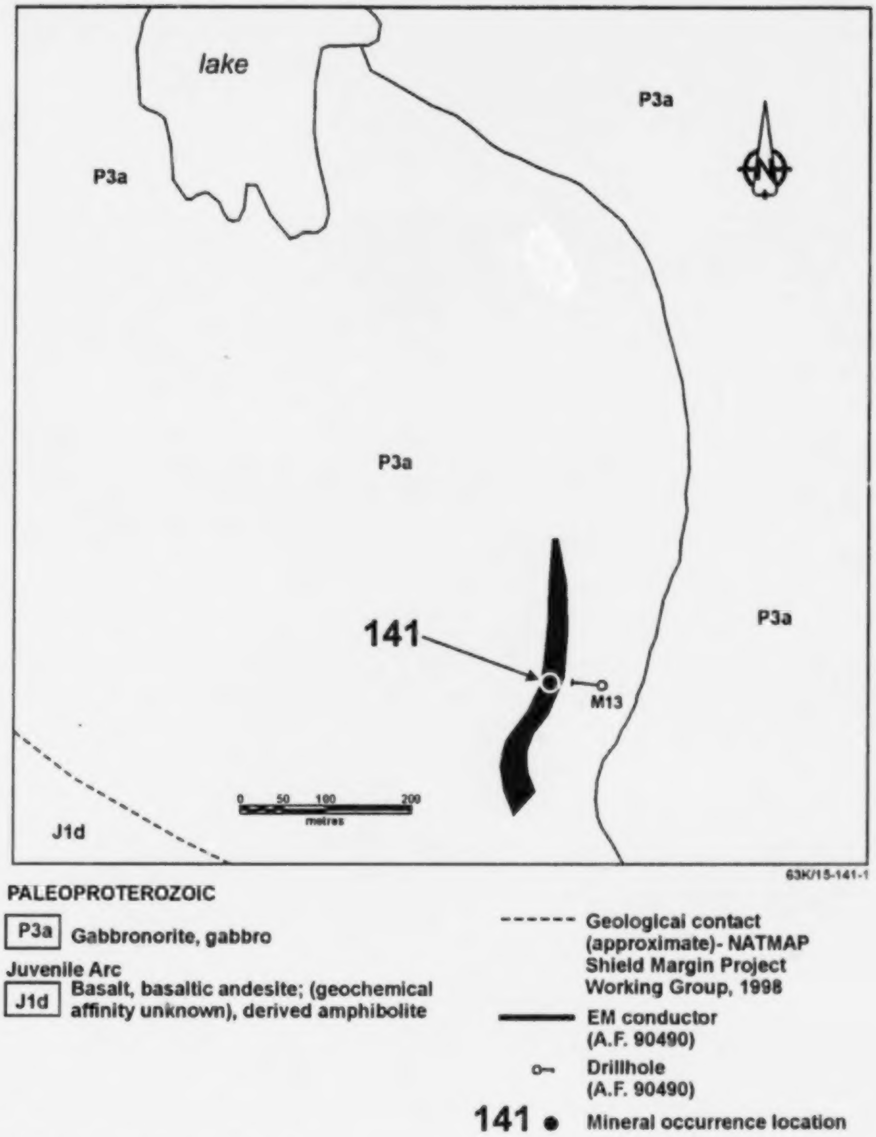

lake
P3a
P3a
P3a
P3a
141
M13
0 50 100 200
metres
J1d
63K/15-141-1
PALEOPROTEROZOIC
P3a Gabbronorite, gabbro
Juvenile Arc
J1d Basalt, basaltic andesite; (geochemical affinity unknown), derived amphibolite
Geological contact (approximate)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 90490)
Drillhole (A.F. 90490)
141 ● Mineral occurrence location

Figure 141-1: Geological setting of occurrence 141.

LOCATION: 142

NAME: mineralization intersected by diamond drilling
UTM: 396520E, 6087905N
AREA: approximately 6.1 km SW of Loonhead Lake
ACCESS: via bush aircraft to Loonhead Lake, then traverse
AIRPHOTO: MB90026-31

EXPLORATION SUMMARY

In 1962 Hudson Bay Exploration and Development Company, Limited drilled several holes to test EM conductors in the occurrence area (A.F. 90492). In 1981 an airborne EM (INPUT) and magnetic survey was performed for BP Minerals Limited, followed by a geological mapping programme (A.F. 92828).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 142-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by foliated and gneissic granodiorite to tonalite (unit P7e). Mapping by Norquay *et al.* (1991, 1994a, b) indicated that the area is underlain by undifferentiated Gants Lake batholith contact aureole schists. The aureole in this area is up to 700 m thick and is imposed upon intermediate to felsic metavolcanic, and possibly metasedimentary, rocks. This sequence has undergone varying degrees of partial melting, *lit-par-lit* injection of granodioritic material, recrystallization and intrusion by granodioritic to aplitic dykes. The foliation tends to be irregular.

Hole TUG-248 intersected a sequence consisting of biotite-plagioclase-garnet gneiss, amphibolite±garnet, and minor amygdaloidal basalt and gabbroic units. Hole TUG-252 intersected a similar sequence, consisting of quartz-feldspar-biotite±garnet gneisses, garnet-amphibole-biotite gneiss, quartz-feldspar-sericite gneiss, granitic pegmatite, rhyolite-dacite porphyry, staurolite-garnet-biotite schist and amphibolite (A.F. 90492).

MINERALIZATION

Several mineralized intervals were intersected in holes TUG-248 and -252 as follows (A.F. 90492) (see table below).

Hole No.	Interval	Mineralization
TUG-248	23.0-27.4 m (75.4-90.0 ft.)	"very slight" to "near solid" pyrrhotite, lesser pyrite, minor chalcopyrite, in garnet-plagioclase-mica gneiss-schist and garnetiferous amphibolite
	31.3-32.4 m (102.8-106.2 ft.)	"slight" to "well mineralized" pyrrhotite, lesser pyrite, minor chalcopyrite, in garnet-plagioclase-mica gneiss-schist and garnetiferous amphibolite
	37.4-38.8 m (122.8-127.3 ft.)	"very slight" to "well mineralized solid" pyrrhotite, lesser pyrite, minor chalcopyrite, in amphibole-biotite schist
	43.4-43.9 m (142.4-144.0 ft.)	"slight" to "solid" pyrrhotite, minor chalcopyrite, in amphibolite
	45.9-50.4 m (150.7-165.4 ft.)	"slight" to "near solid" pyrrhotite, minor pyrite, chalcopyrite, in amphibolite
TUG-252	144.4-144.7 m (473.7-474.8 ft.)	"well mineralized" pyrrhotite, minor chalcopyrite, in garnet-biotite gneiss
	157.5-158.1 m (516.6-518.6 ft.)	"slight" to "solid" pyrrhotite, minor chalcopyrite, in "granite gneiss"
	160.6-174.0 m (526.9-571.0 ft.)	"well mineralized" to "solid" pyrrhotite, minor chalcopyrite, in amphibolite
	192.9-198.0 m (633.0-649.5 ft.)	scattered "solid" pyrrhotite intervals, minor chalcopyrite, in amphibolite
	206.0-208.5 m (675.8-684.2 ft.)	"slight" to "solid" pyrrhotite, minor chalcopyrite, in amphibolite
	209.8-216.7 m (688.4-711.1 ft.)	"slight" to "solid" pyrrhotite, minor chalcopyrite, in amphibolite

GEOCHEMICAL DATA

No assays were reported for the mineralized intervals intersected in these holes.

CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation. The sulphides have probably been extensively recrystallized as this mineralization occurs within the Gants Lake batholith contact aureole.

REFERENCES

A.F. 90492 and 92828; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

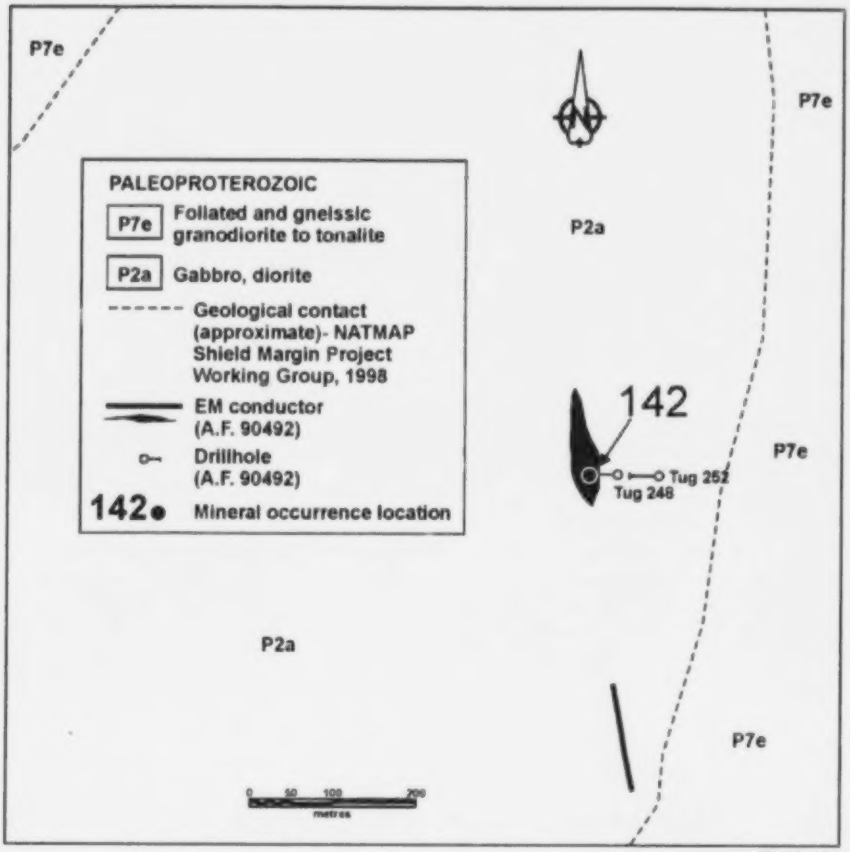

P7e
P7e
PALEOPROTEROZOIC
P7e Foliated and gneissic granodiorite to tonalite
P2a Gabbro, diorite
Geological contact (approximate)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 90492)
Drillhole (A.F. 90492)
142● Mineral occurrence location
P2a
142
Tug 252
Tug 248
P7e
P2a
P7e
0 50 100 200
metres
63K/15-142-1

Figure 142-1: Geological setting of occurrence 142.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Norquay, L.I., Prouse, D.E., Bieri, M. and Gale, G.H.

1991: Geology of a part of the North Star Lake area (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1991, pp. 31-40.

Norquay, L.I., Prouse, D.E., and Gale, G.H.

1994a: The North Star Lake project (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1994, pp. 83-84.

1994b: North Star Lake (NTS 63K/15NE1); Cancelled Assessment File, Manitoba Industry, Trade and Mines, Minerals Division, Preliminary Map 1994S-2, 1:10 000.

LOCATION: 143

NAME: mineralization intersected by diamond drilling
UTM: 396520E, 6087615N
AREA: approximately 6.2 km SW of Loonhead Lake
ACCESS: via bush aircraft to Loonhead Lake, then traverse
AIRPHOTO: MB90026-31

EXPLORATION SUMMARY

In 1962 Hudson Bay Exploration and Development Company, Limited drilled several holes to test EM conductors in the occurrence area (A.F. 90492). In 1981 an airborne EM (INPUT) and magnetic survey was performed for BP Minerals Limited, followed by a geological mapping programme (A.F. 92828).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 143-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by foliated and gneissic granodiorite to tonalite (unit P7e). Mapping by Norquay *et al.* (1991, 1994a, b) indicated that the area is underlain by undifferentiated Gants Lake batholith contact aureole schists. The aureole in this area is up to 700 m thick and is imposed upon intermediate to felsic metavolcanic, and possibly metasedimentary, rocks. This sequence has undergone varying degrees of partial melting, *lit-par-lit* injection of granodioritic material, recrystallization and intrusion by granodioritic to aplitic dykes. The foliation tends to be irregular.

Hole TUG-250 intersected a sequence of mineralogically (mica±garnet±amphibole±sericite) and compositionally (dacite, rhyolite) variable schists, biotite-plagioclase gneiss, and granitic and mafic dykes (A.F. 90492).

MINERALIZATION

An interval that is "well mineralized" to "near solid" with pyrite and pyrrhotite, and contains minor chalcopyrite was intersected between 28.5-29.8 m (93.5-97.9 ft.) in hole TUG-250 (A.F. 90492). The sulphides are hosted by amphibolite.

GEOCHEMICAL DATA

No assays were reported for the mineralized intervals intersected in this hole.

CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation. The mineralogical description of the rocks associated with this occurrence suggests that they may be part of a hydrothermal alteration zone. The rocks have been extensively recrystallized as they occur within the Gants Lake batholith contact aureole.

REFERENCES

A.F. 90492 and 92828; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Norquay, L.I., Prouse, D.E., Bieri, M. and Gale, G.H.

1991: Geology of a part of the North Star Lake area (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1991, pp. 31-40.

Norquay, L.I., Prouse, D.E., and Gale, G.H.

1994a: The North Star Lake project (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1994, pp. 83-84.

1994b: North Star Lake (NTS 63K/15NE1); Manitoba Energy and Mines, Minerals Division, Preliminary Map 1994S-2, 1:10 000.

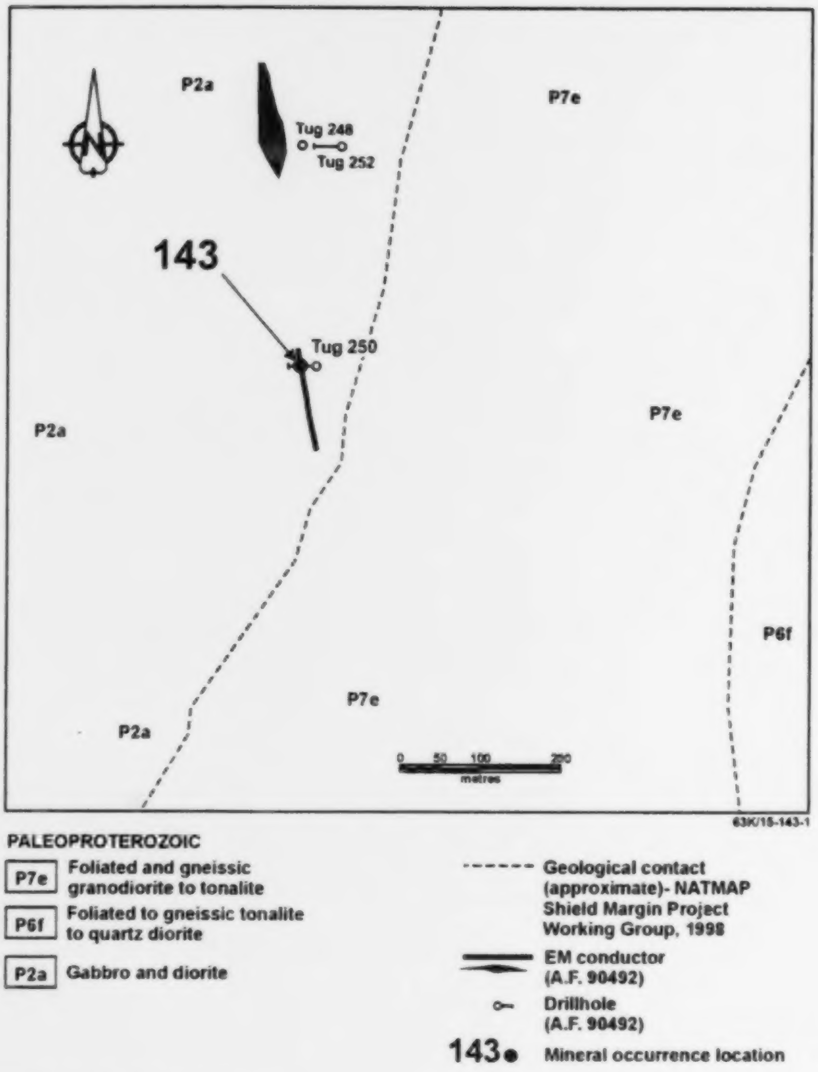

P2a
Tug 248
Tug 252
P7e
143
Tug 250
P2a
P7e
P6f
P7e
P2a
0 50 100 200
metres
63K/15-143-1
PALEOPROTEROZOIC
P7e Foliated and gneissic granodiorite to tonalite
P6f Foliated to gneissic tonalite to quartz diorite
P2a Gabbro and diorite
Geological contact (approximate)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 90492)
Drillhole (A.F. 90492)
143● Mineral occurrence location

Figure 143-1: Geological setting of occurrence 143.

LOCATION: 144

NAME: mineralization intersected by diamond drilling
UTM: 401860E, 6088170N
AREA: approximately 2.1 km SSW of Loonhead Lake
ACCESS: via bush aircraft to Loonhead Lake, then traverse
AIRPHOTO: MB90024-147

EXPLORATION SUMMARY

In 1957 and 1958 Hudson Bay Exploration and Development Company, Limited performed an EM (Loop-Frame equipment) survey (A.F. 90488). Conductors delineated by this survey were drilled in 1958 (A.F. 90489). In 1981 an airborne EM (INPUT) and magnetic survey was performed for BP Minerals Limited, followed by a geological mapping programme (A.F. 92828).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 144-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by basalt, basaltic andesite and derived amphibolite (unit J1d) with thin bands of garnet-hornblende-plagioclase gneiss (McGlynn, 1959). These rocks may be the extension of the Eastern basalts in the North Star Lake area (Norquay *et al.*, 1993, 1994). To the north, the volcanic rocks have been intruded by a pyroxenitic metagabbro stock (Zwanzig, 1995, 1996a, b). This stock is geochemically similar to the strongly differentiated Josland Lake tholeiitic gabbro intrusions (Bailes, 1980). The Norris Lake pluton, consisting of gneissic hornblende-biotite-quartz diorite to granodiorite, is exposed to the south (McGlynn, 1959).

Hole H-13 intersected a sequence of amphibole-biotite±quartz±sericite±garnet schists and garnetiferous "andesite" (A.F. 90489).

MINERALIZATION

Hole H-13 intersected an interval of solid pyrite with minor pyrrhotite from 39.8-40.7 m (130.5-133.4 ft.) (A.F. 90489). The units above and below the sulphides are quartz-amphibole-sericite schist and quartz-biotite schist respectively.

GEOCHEMICAL DATA

No assays were reported in the assessment file for this mineralized interval.

CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation.

REFERENCES

A.F. 90488, 90489 and 92828; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

Bailes, A.H.

1980: Geology of the File Lake Area; Manitoba Energy and Mines, Mineral Resources Division, Geological Report GR78-1, 134 pp.

McGlynn, J.C.

1959: Elbow-Heming Lakes Area, Manitoba; Geological Survey of Canada, Memoir 305, 72 pp.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Norquay, L.I., Prouse, D.E. and Gale, G.H.

1993: Geological investigations in the North Star Lake area (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1993, pp. 78-83.

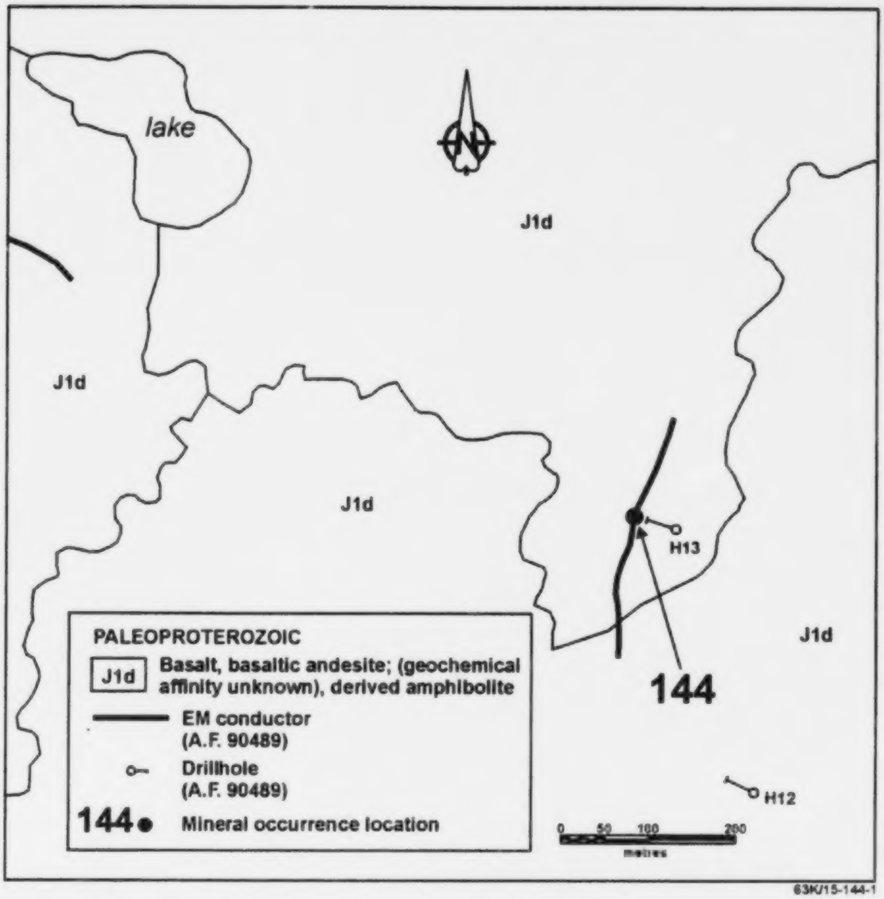
1994: The North Star Lake project (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1994, pp. 83-84.

Zwanzig, H.V.

1995: Geology of the Dow Lake area (parts of NTS 63K/15 and 63N/2); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1995, pp. 19-23.

1996a: Geology of the Dow Lake-Martell Lake area (parts of NTS 63K/15 and 63N/2); Cancelled Assessment File, Manitoba Energy and Mines, Minerals Division, Report of Activities, 1996, pp. 21-28.

1996b: Geology of the Dow Lake-Martell Lake area (parts of NTS 63K/15 and 63N/2); Cancelled Assessment File, Manitoba Energy and Mines, Preliminary Map 1996K-1, 1:20 000.


lake
J1d
J1d
J1d
J1d
H13
144
H12
PALEOPROTEROZOIC
J1d Basalt, basaltic andesite; (geochemical affinity unknown), derived amphibolite
EM conductor (A.F. 90489)
Drillhole (A.F. 90489)
144 Mineral occurrence location
0 50 100 200
metres

63K/15-144-1

Figure 144-1: Geological setting of occurrence 144.

LOCATION: 145

NAME: mineralization intersected by diamond drilling
UTM: 402000E, 6087835N
AREA: approximately 2.4 km SSW of Loonhead Lake
ACCESS: via bush aircraft to Loonhead Lake, then traverse
AIRPHOTO: MB90024-147

EXPLORATION SUMMARY

In 1957 and 1958 Hudson Bay Exploration and Development Company, Limited performed an EM (Loop-Frame equipment) survey (A.F. 90488). Conductors delineated by this survey were drilled in 1958 (A.F. 90489). In 1981 an airborne EM (INPUT) and magnetic survey was performed for BP Minerals Limited, followed by a geological mapping programme (A.F. 92828).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 145-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by mafic volcanic rocks (unit J1d) with thin bands of garnet-hornblende-plagioclase gneiss (McGlynn, 1959). These rocks may be the extension of the Eastern basalts in the North Star Lake area (Norquay *et al.*, 1993, 1994). To the north, the volcanic rocks have been intruded by a pyroxenitic metagabbro stock (Zwanzig, 1995, 1996a, b). This stock is geochemically similar to the strongly differentiated Josland Lake tholeiitic gabbro intrusions (Bailes, 1980). The Norris Lake pluton, consisting of gneissic hornblende-biotite-quartz diorite to granodiorite, is exposed to the south (McGlynn, 1959).

Hole H-12 intersected a sequence consisting of massive, garnetiferous andesite, quartz-amphibole schist and granodiorite (A.F. 90489).

MINERALIZATION

"Fair" to "near solid" pyrrhotite with minor pyrite was intersected between 52.8-54.3 m (173.2-178.2 ft.) in hole H-12 (A.F. 90489). It is hosted by quartz-amphibole schist.

GEOCHEMICAL DATA

No assays were reported in the assessment file for this mineralized interval.

CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation.

REFERENCES

A.F. 90488, 90489 and 92828; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

Bailes, A.H.

1980: Geology of the File Lake Area; Manitoba Energy and Mines, Mineral Resources Division, Geological Report GR78-1, 134 pp.

McGlynn, J.C.

1959: Elbow-Heming Lakes Area, Manitoba; Geological Survey of Canada, Memoir 305, 72 pp.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Norquay, L.I., Prouse, D.E. and Gale, G.H.

1993: Geological investigations in the North Star Lake area (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1993, pp. 78-83.

1994: The North Star Lake project (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1994, pp. 83-84.

Zwanzig, H.V.

1995: Geology of the Dow Lake area (parts of NTS 63K/15 and 63N/2); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1995, pp. 19-23.

1996a: Geology of the Dow Lake-Martell Lake area (parts of NTS 63K/15 and 63N/2); Cancelled Assessment File, Manitoba Energy and Mines, Minerals Division, Report of Activities, 1996, pp. 21-28.

1996b: Geology of the Dow Lake-Martell Lake area (parts of NTS 63K/15 and 63N/2); Cancelled Assessment File, Manitoba Energy and Mines, Preliminary Map 1996K-1, 1:20 000.

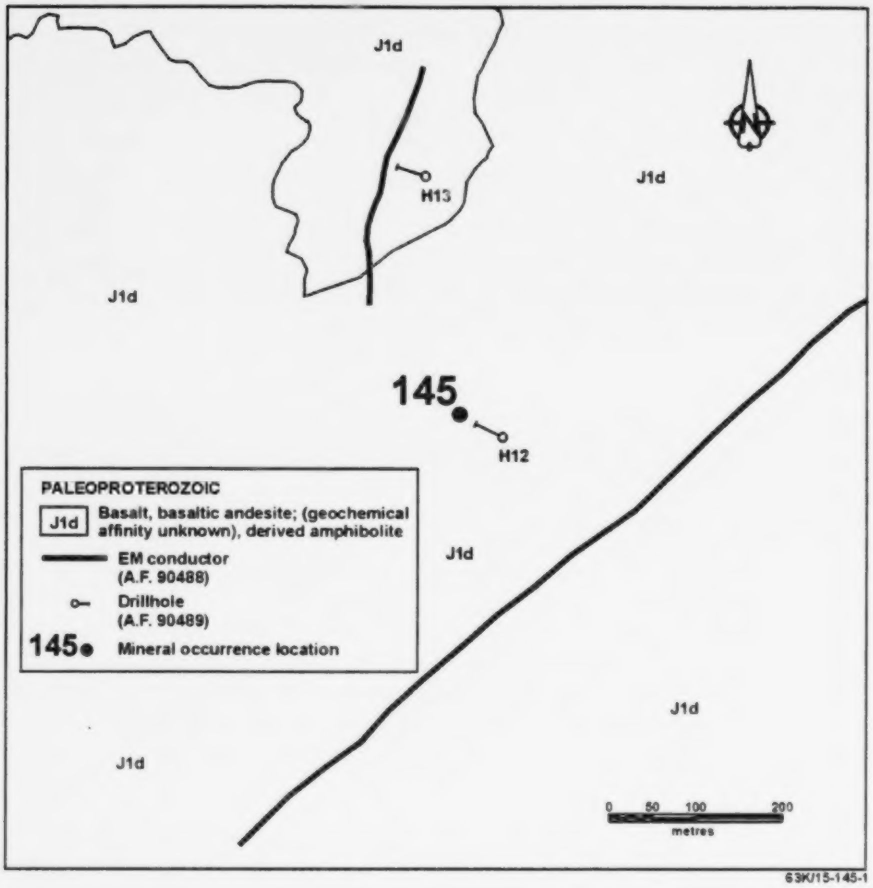

J1d
J1d
J1d
J1d
J1d
J1d
H13
H12
145
PALEOPROTEROZOIC
J1d Basalt, basaltic andesite; (geochemical affinity unknown), derived amphibolite
EM conductor (A.F. 90488)
Drillhole (A.F. 90489)
145● Mineral occurrence location
0 50 100 200
metres
63K/15-145-1

Figure 145-1: Geological setting of occurrence 145.

LOCATION: 146

NAME: mineralization intersected by diamond drilling
UTM: 402710E, 6088235N
AREA: approximately 1.3 km SW of Loonhead Lake
ACCESS: via bush aircraft to Loonhead Lake, then traverse
AIRPHOTO: MB90024-147

EXPLORATION SUMMARY

In 1957 and 1958 Hudson Bay Exploration and Development Company, Limited performed an EM (Loop-Frame equipment) survey (A.F. 90488). Conductors delineated by this survey were drilled in 1958 (A.F. 90489). In 1981 an airborne EM (INPUT) and magnetic survey was performed for BP Minerals Limited, followed by a geological mapping programme (A.F. 92828).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 146-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by mafic volcanic rocks (unit J1d) with thin bands of garnet-hornblende-plagioclase gneiss (McGlynn, 1959). These rocks may be the extension of the Eastern basalts in the North Star Lake area (Norquay *et al.*, 1993, 1994). To the north, the volcanic rocks have been intruded by a pyroxenitic metagabbro stock (Zwanzig, 1995, 1996a, b). This stock is geochemically similar to the strongly differentiated Josland Lake tholeiitic gabbro intrusions (Bailes, 1980). The Norris Lake pluton, consisting of gneissic hornblende-biotite-quartz diorite to granodiorite, is exposed to the south (McGlynn, 1959).

Hole H-20 intersected an interval consisting of chloritic diorite and amphibolitic "andesite", and amphibole-biotite gneiss. Garnets are a common minor constituent of all rock types (A.F. 90489).

MINERALIZATION

Two intervals of "near solid" pyrrhotite and pyrite were intersected between 49.8-50.4 m (163.4-165.5 ft.) and 92.6-93.3 m (303.7-306.2 ft.) in hole H-20 (A.F. 90489). Both intervals are hosted by amphibolitic "andesite".

GEOCHEMICAL DATA

No assays were reported in the assessment file for these mineralized intervals.

CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation.

REFERENCES

A.F. 90488, 90489 and 92828; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

Bailes, A.H.

1980: Geology of the File Lake Area; Manitoba Energy and Mines, Mineral Resources Division, Geological Report GR78-1, 134 pp.

McGlynn, J.C.

1959: Elbow-Heming Lakes Area, Manitoba; Geological Survey of Canada, Memoir 305, 72 pp.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Norquay, L.I., Prouse, D.E. and Gale, G.H.

1993: Geological investigations in the North Star Lake area (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1993, pp. 78-83.

1994: The North Star Lake project (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1994, pp. 83-84.

Zwanzig, H.V.

1995: Geology of the Dow Lake area (parts of NTS 63K/15 and 63N/2); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1995, pp. 19-23.

1996a: Geology of the Dow Lake-Martell Lake area (parts of NTS 63K/15 and 63N/2); Cancelled Assessment File, Manitoba Energy and Mines, Minerals Division, Report of Activities, 1996, pp. 21-28.

1996b: Geology of the Dow Lake-Martell Lake area (parts of NTS 63K/15 and 63N/2); Cancelled Assessment File, Manitoba Energy and Mines, Preliminary Map 1996K-1, 1:20 000.

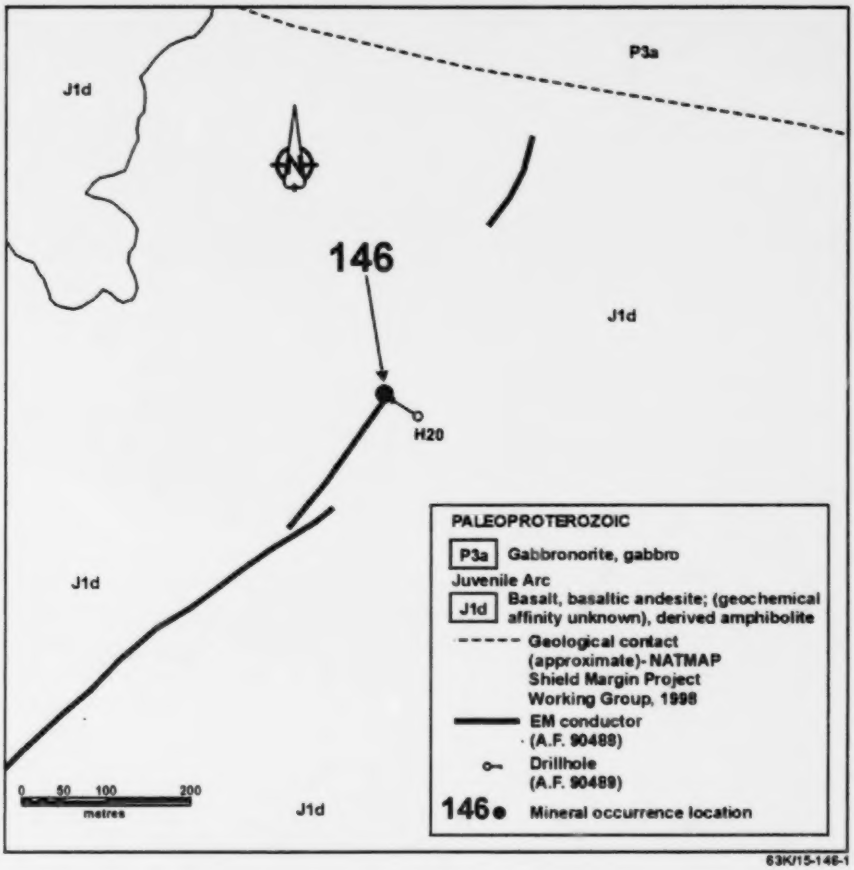

J1d
P3a
146
J1d
H20
J1d
0 50 100 200
metres
J1d
PALEOPROTEROZOIC
P3a Gabbronorite, gabbro
Juvenile Arc
J1d Basalt, basaltic andesite; (geochemical affinity unknown), derived amphibolite
Geological contact (approximate)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 90488)
Drillhole (A.F. 90489)
146● Mineral occurrence location
63K/15-146-1

Figure 146-1: Geological setting of occurrence 146.

LOCATION: 147

NAME: mineralization intersected by diamond drilling
UTM: 403010E, 6087505N
AREA: approximately 1.8 km SSW of Loonhead Lake
ACCESS: via bush aircraft to Loonhead Lake, then traverse
AIRPHOTO: MB90024-147

EXPLORATION SUMMARY

In 1957 and 1958 Hudson Bay Exploration and Development Company, Limited performed an EM (Loop-Frame equipment) survey (A.F. 90488). Conductors delineated by this survey were drilled in 1958 (A.F. 90489). In 1981 an airborne EM (INPUT) and magnetic survey was performed for BP Minerals Limited, followed by a geological mapping programme (A.F. 92828).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 147-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by gneissic hornblende-biotite-quartz diorite to granodiorite (unit P5a) of the Norris Lake pluton. Mafic volcanic rocks with thin bands of garnet-hornblende-plagioclase gneiss (unit J1d) occur to the north (McGlynn, 1959). These rocks may be the extension of the Eastern basalts in the North Star Lake area (Norquay *et al.*, 1993, 1994).

Hole H-9 intersected gabbro and diorite to granodiorite of the Norris Lake pluton (A.F. 90489). Thin intervals of amphibole-quartz-chlorite schist occur throughout the core.

MINERALIZATION

Magnetite with minor pyrrhotite and pyrite are closely associated with amphibole-quartz-chlorite±biotite schist between 23.7-33.1 m (77.7-108.7 ft.) in hole H-9 (A.F. 90489). The quantity and character of the mineralization were not described.

GEOCHEMICAL DATA

No assays were reported in the assessment file for this mineralized interval.

CLASSIFICATION

Chemical-sediment type deposit; oxide facies iron formation.

REFERENCES

A.F. 90488, 90489 and 92828; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

McGlynn, J.C.

1959: Elbow-Heming Lakes Area, Manitoba; Geological Survey of Canada, Memoir 305, 72 pp.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Norquay, L.I., Prouse, D.E. and Gale, G.H.

1993: Geological investigations in the North Star Lake area (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1993, pp. 78-83.

1994: The North Star Lake project (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1994, pp. 83-84.

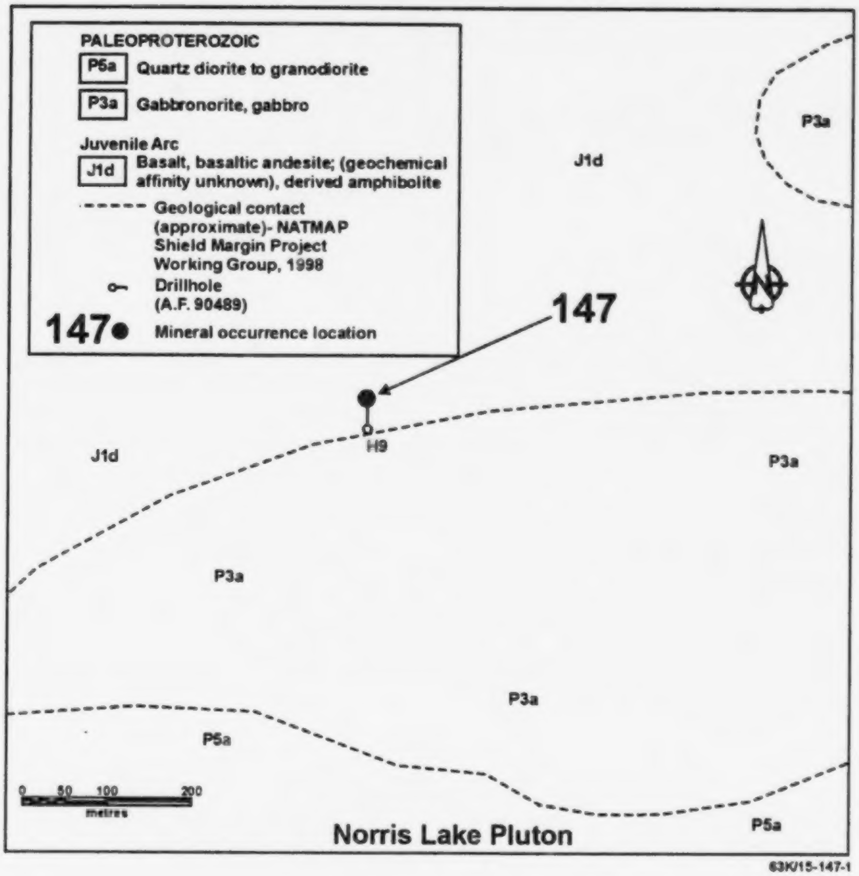

PALEOPROTEROZOIC
P5a Quartz diorite to granodiorite
P3a Gabbronorite, gabbro
Juvenile Arc
J1d Basalt, basaltic andesite; (geochemical affinity unknown), derived amphibolite
Geological contact (approximate)- NATMAP Shield Margin Project Working Group, 1998
Drillhole (A.F. 90489)
147 Mineral occurrence location
147
H9
J1d
P3a
P5a
N
0 50 100 200
metres
Norris Lake Pluton
63K/15-147-1

Figure 147-1: Geological setting of occurrence 147.

LOCATION: 148

NAME: mineralization intersected by diamond drilling
UTM: 399770E, 6088145N
AREA: approximately 5.8 km N of North Star Lake
ACCESS: via bush aircraft to North Star Lake, by boat along stream north of North Star Lake, then traverse
AIRPHOTO: MB90024-165

EXPLORATION SUMMARY

In 1957 and 1958 Hudson Bay Exploration and Development Company, Limited performed an EM (Loop-Frame equipment) survey. Conductors delineated by this survey were drilled in 1958 (A.F. 90488). In 1981 an airborne EM (INPUT) and magnetic survey was performed for BP Minerals Limited, followed by a geological mapping programme (A.F. 92828).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 166-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by a sequence of folded felsic to intermediate gneisses (unit W5b) and intermediate hornblende-biotite gneisses (unit W5d). These rocks lie adjacent to the West Reed North Star shear zone (Syme *et al.*, 1995a, b), a major kilometres thick tectonite that has been traced for more than 25 km from the Dow Lake area southward to the Phanerozoic cover. Despite the intense deformation that the rocks within and adjacent to this shear zone have been subjected to, Norquay *et al.* (1994a, b) were able to define the pre-deformational character of some of the affected units. The rocks at the occurrence consist of mafic and felsic conglomerate.

Hole EFF-26 intersected a sequence of fine-grained garnet-amphibole-quartz-biotite "gneiss" to "andesite" (A.F. 90488). A rhyolite fragment breccia with a mafic matrix was intersected at the bottom of the hole.

MINERALIZATION

Several mineralized intervals were intersected in hole EFF-26 as follows (A.F. 90488) (see table below).

Interval	Mineralization
41.6-42.0 m (136.5-137.9 ft.)	"well mineralized" pyrite, pyrrhotite, in fine-grained garnet-amphibole-quartz-biotite "gneiss" to "andesite"
46.2-46.3 m (151.5-151.9 ft.)	"near solid" pyrrhotite, minor pyrite, trace chalcopyrite, sphalerite, in siliceous, fine-grained garnet-amphibole-quartz-biotite "gneiss" to "andesite", rounded quartz (rhyolite?) fragments
46.7-48.2 m (153.2-158.2 ft.)	"near solid" pyrrhotite, minor pyrite, trace chalcopyrite, sphalerite, in siliceous, fine-grained garnet-amphibole-quartz-biotite "gneiss" to "andesite", rounded quartz (rhyolite?) fragments
49.7-49.9 m (163.2-163.8 ft.)	"near solid" pyrrhotite, minor pyrite, trace chalcopyrite, sphalerite, in siliceous, fine-grained garnet-amphibole-quartz-biotite "gneiss" to "andesite", rounded quartz (rhyolite?) fragments

GEOCHEMICAL DATA

No assays were reported in the assessment file for these mineralized intervals.

CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation.

REFERENCES

A.F. 90488 and 92828; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Norquay, L.I., Prouse, D.E., and Gale, G.H.

1994a: The North Star Lake project (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1994, pp. 83-84.

1994b: North Star Lake (NTS 63K/15NE1); Cancelled Assessment File, Manitoba Industry, Trade and Mines, Minerals Division, Preliminary Map 1994S-2, 1:10 000.

Syme, E.C., Bailes, A.H. and Lucas, S.B.

1995a: Geology of the Reed Lake area (Parts of 63K/9 and 10); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1995, pp. 42-60.

1995b: Geology of the Reed Lake area (Parts of 63K/9 and 10); Manitoba Energy and Mines, Minerals Division Preliminary Map 1995F-1, 1:50 000.

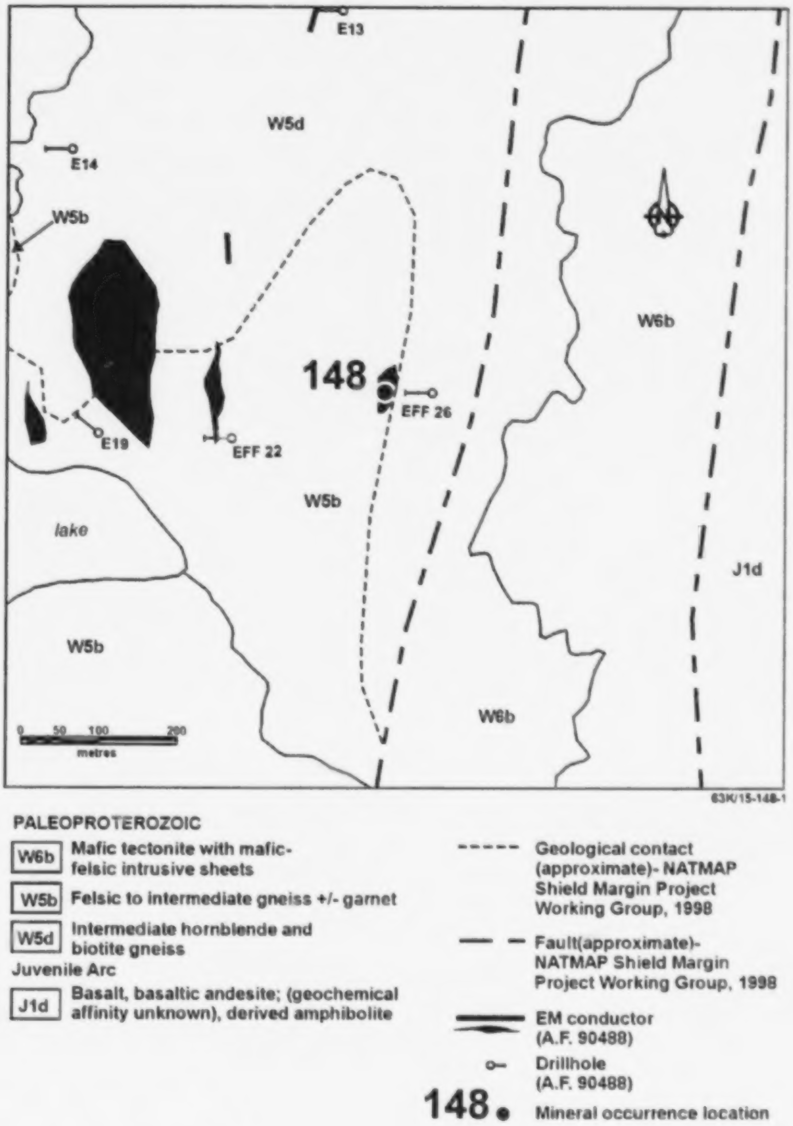

E13
W5d
E14
W5b
148
EFF 26
E19
EFF 22
W5b
lake
W5b
W6b
W6b
J1d
0 50 100 200
metres
63K/15-148-1
PALEOPROTEROZOIC
W6b Mafic tectonite with mafic-felsic intrusive sheets
W5b Felsic to intermediate gneiss +/- garnet
W5d Intermediate hornblende and biotite gneiss
Juvenile Arc
J1d Basalt, basaltic andesite; (geochemical affinity unknown), derived amphibolite
Geological contact (approximate)- NATMAP Shield Margin Project Working Group, 1998
Fault(approximate)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 90488)
Drillhole (A.F. 90488)
148 Mineral occurrence location

Figure 148-1: Geological setting of occurrence 148.

LOCATION: 149

NAME: mineralization intersected by diamond drilling
UTM: 399760E, 6087435N
AREA: approximately 3.6 km SW of Loonhead Lake
ACCESS: via bush aircraft to North Star Lake, by boat along stream north of North Star Lake, then traverse
AIRPHOTO: MB90024-163

EXPLORATION SUMMARY

In 1957 and 1958 Hudson Bay Exploration and Development Company, Limited performed an EM (Loop-Frame equipment) survey. Conductors delineated by this survey were drilled in 1958 (A.F. 90489). In 1981 an airborne EM (INPUT) and magnetic survey was performed for BP Minerals Limited, followed by a geological mapping programme (A.F. 92828).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 149-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by a felsic metavolcanic garnet+amphibole gneiss sequence (unit J4b). It is bounded to the east and west by layered to uniform amphibolite (unit J1e). Despite the intense ductile deformation that the rocks in this area have undergone, Norquay *et al.* (1992; 1994a, b) were able to define the depositional character of some of these units. The occurrence is located within a folded sequence of rhyolites, mafic volcanic rocks with banded oxide facies (magnetite) and silicate facies (garnetite) iron formation, basaltic rocks and mafic tuff. The major units show a high degree of internal textural and compositional variability, comprising flows, tuffs, volcanic breccia, possible extrusive rocks with intrusive equivalents, foliated amphibolite and thin felsic units.

Holes H-29, -30, -31, -32, -33, -34, -35, -40, and -45 intersected a series of biotite-quartz±amphibole±plagioclase±sericite±chlorite±garnet±staurolite "gneisses" with minor magnetite-bearing intervals, biotitic "quartzite" and feldspar-amphibole porphyry dykes (A.F. 90489). The "gneissic" assemblage is similar to the dominantly supracrustal rocks mapped at surface in the occurrence area. The detail of the lithologic descriptions for the drill holes is not sufficient to allow direct correlation with the units exposed in outcrop. It appears likely the "quartzite" units described in some of the holes represent rhyolitic flows.

MINERALIZATION

Mineralized intervals were intersected as follows (A.F. 90489) (see table below).

Hole No.	Interval	Mineralization
H-29	50.4-51.4 m (165.2-168.5 ft.)	to "near solid sulphides", pyrrhotite and pyrite, sphalerite, minor chalcopyrite, in quartz-garnet-biotite "gneiss"
	53.6-53.7 m (175.8-176.2 ft.)	sphalerite and chalcopyrite, in fine-grained, foliated quartz-biotite±garnet "gneiss"
H-30	80.0-80.4 m (262.5-263.8 ft.)	"well mineralized" to "near solid" pyrrhotite, minor pyrite, trace chalcopyrite, sphalerite, in amphibole-biotite-garnet±feldspar "gneiss"
	82.0-82.3 m (269.0-270.0 ft.)	"well mineralized" pyrrhotite, trace chalcopyrite, sphalerite, in amphibole-biotite-garnet±feldspar "gneiss"
	98.8-98.9 m (324.0-324.6 ft.)	"well mineralized" pyrrhotite, trace chalcopyrite, in amphibole-biotite-garnet±feldspar "gneiss"
H-31	104.2-104.6 m (341.8-343.1 ft.)	"well mineralized" pyrrhotite, trace chalcopyrite, sphalerite, in quartz-biotite±sericite±garnet "gneiss"
H-32	85.8-91.4 m (281.4-300.0 ft.)	"slight" to "near solid" pyrite, arsenopyrite, pyrrhotite, trace sphalerite and chalcopyrite, in biotite-amphibole-garnet-plagioclase "gneiss"
	106.9-110.4 m (350.8-362.3 ft.)	"well mineralized" to "near solid" pyrrhotite, minor chalcopyrite and sphalerite, in quartz-biotite± amphibole±garnet "gneiss"
H-33	83.7-84.1 m (274.5-275.8 ft.)	"mineralized to well mineralized" pyrrhotite, trace chalcopyrite, sphalerite, in fine-grained amphibole-biotite-plagioclase±garnet "gneiss"
	118.7-119.1 m (389.4-390.7 ft.)	"well mineralized" to "solid" pyrrhotite, minor pyrite, trace chalcopyrite, sphalerite, in fine-grained amphibole-biotite-plagioclase±garnet "gneiss"
	121.3-121.8 m (397.9-399.6 ft.)	"near solid" pyrrhotite, trace chalcopyrite, sphalerite, in fine grained amphibole-biotite-plagioclase±garnet "gneiss"
	128.0-128.6 m (420.0-421.9 ft.)	"mineralized to well mineralized" pyrite, pyrrhotite, trace chalcopyrite, sphalerite, in fine-grained quartz-biotite±amphibole±garnet "gneiss"

Hole No.	Interval	Mineralization
H-34	109.7-110.0 m (360.0-360.8 ft.)	"solid" chalcopyrite, trace sphalerite, in fine-grained amphibole-plagioclase "gneiss"
H-35	22.0-22.3 m (72.2-73.2 ft.)	"well mineralized" pyrite, in amphibole-biotite-plagioclase±quartz±garnet±sericite "gneiss"
	84.7-84.8 m (277.9-278.1 ft.)	"near solid" pyrite, trace chalcopyrite, sphalerite, in amphibole-biotite-plagioclase±quartz±garnet±sericite±magnetite "gneiss"
	117.8-118.0 m (386.6-387.0 ft.)	"mineralized" pyrite, pyrrhotite, trace sphalerite, arsenopyrite, in biotite-quartz±garnet±sericite±chlorite±staurolite "gneiss"
	119.0-119.1 m (390.6-390.9 ft.)	"near solid" pyrite, pyrrhotite, trace chalcopyrite, sphalerite, in biotite-quartz±garnet±sericite±chlorite±staurolite "gneiss"
H-40	84.8-85.1 m (278.2-279.2 ft.)	"well mineralized" pyrrhotite, trace chalcopyrite, in fine-grained biotite-quartz-plagioclase±garnet "gneiss"
	123.3-123.4 m (404.6-405.0 ft.)	"mineralized to well mineralized" pyrite, pyrrhotite, in quartz-biotite ±amphibole±garnet±sericite "gneiss"
	195.6-195.7 m (641.8-642.1 ft.)	pyrite as solid bands, in quartz-biotite±garnet±sericite "gneiss"
	223.6-224.4 m (733.5-736.1 ft.)	"well mineralized to near solid" pyrrhotite, chalcopyrite and sphalerite, in quartz and sericitic matrix
H-45	34.3-34.4 m (112.7-112.9 ft.)	"near solid" pyrrhotite, minor pyrite, trace chalcopyrite, in fine grained foliated quartz-plagioclase-amphibole±biotite±garnet "gneiss"
	45.6-45.7 m (149.8-149.9 ft.)	"near solid" pyrite, in fine-grained foliated quartz-plagioclase-amphibole±biotite±garnet "gneiss"
	125.1-128.3 m (410.5-420.8 ft.)	"slightly" to "well mineralized" with pyrite, minor pyrrhotite, in quartz-biotite±garnet±sericite±chlorite "gneiss"
	179.2-179.3 m (588.0-588.4 ft.)	"well mineralized" with pyrite, trace chalcopyrite, sphalerite, in fine grained amphibole-biotite-plagioclase-quartz±garnet "gneiss"
	189.0-189.9 m (620.0-622.9 ft.)	"near solid" pyrrhotite, chalcopyrite, sphalerite, in fine-grained amphibole-biotite-plagioclase-quartz±garnet "gneiss"

GEOCHEMICAL DATA

No assays were reported in the assessment file for these mineralized intervals.

CLASSIFICATION

Stratabound massive sulphide type deposit; volcanic rock associated. This occurrence appears to have an associated hydrothermal alteration zone.

REFERENCES

A.F. 90489 and 92828; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Norquay, L.I., Prouse, D.E., Heine, T.H. and Gale, G.H.

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Norquay, L.I., Prouse, D.E., and Gale, G.H.

1994a: The North Star Lake project (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1994, pp. 83-84.

1994b: North Star Lake (NTS 63K/15NE1); Cancelled Assessment File, Manitoba Industry, Trade and Mines, Minerals Division, Preliminary Map 1994S-2, 1:10 000.

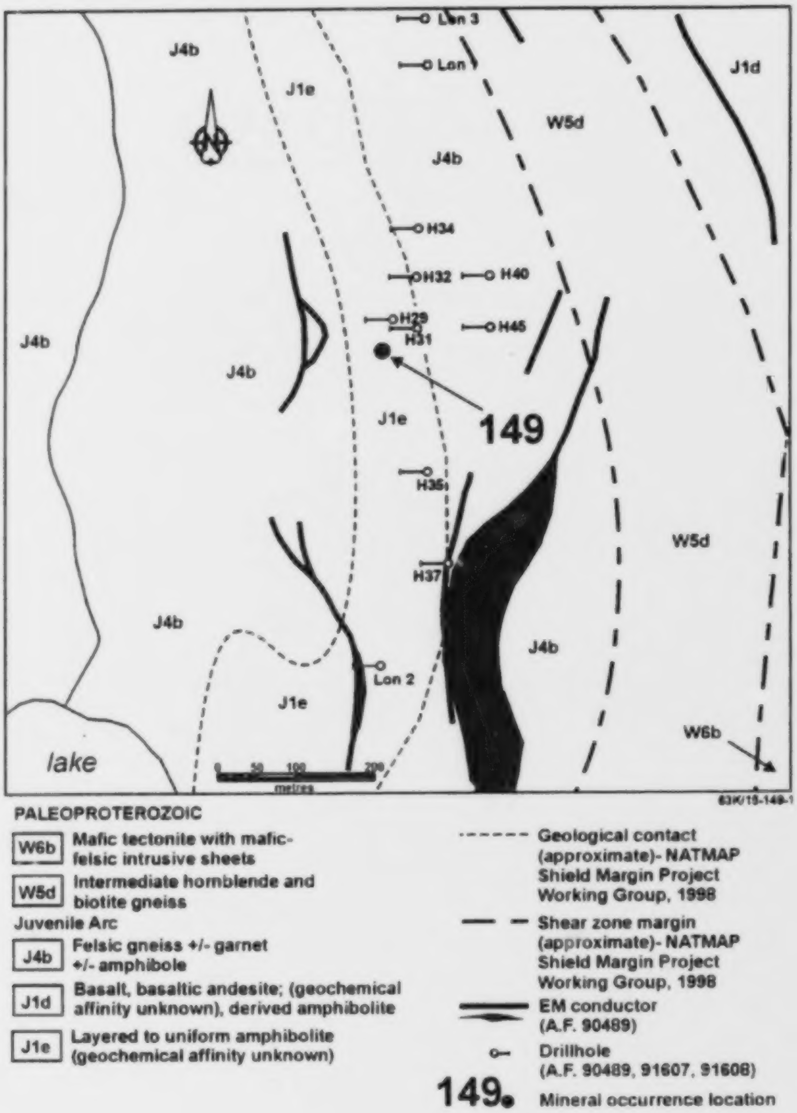

Lon 3
Lon
J4b
J1e
J1d
W5d
J4b
H34
H32
H40
H29
H31
H45
J4b
J4b
149
J1e
H35
H37
W5d
J4b
J4b
Lon 2
J1e
W6b
lake
0 50 100 200
metres
63K/16-149-1
PALEOPROTEROZOIC
W6b Mafic tectonite with mafic-felsic intrusive sheets
W5d Intermediate hornblende and biotite gneiss
Juvenile Arc
J4b Felsic gneiss +/- garnet +/- amphibole
J1d Basalt, basaltic andesite; (geochemical affinity unknown), derived amphibolite
J1e Layered to uniform amphibolite (geochemical affinity unknown)
Geological contact (approximate)- NATMAP Shield Margin Project Working Group, 1998
Shear zone margin (approximate)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 90489)
Drillhole (A.F. 90489, 91607, 91608)
149 Mineral occurrence location

Figure 149-1: Geological setting of occurrence 149.

LOCATION: 150

NAME: mineralization intersected by diamond drilling
UTM: 399680E, 6087305N
AREA: approximately 3.3 km SW of Loonhead Lake
ACCESS: via bush aircraft to North Star Lake, by boat along stream north of North Star Lake, then traverse
AIRPHOTO: MB90024-164

EXPLORATION SUMMARY

In 1957 and 1958 Hudson Bay Exploration and Development Company, Limited performed an EM (loop-frame equipment) survey. Conductors delineated by this survey were drilled in 1958 (A.F. 90489). In 1981 an airborne EM (INPUT) and magnetic survey was performed for BP Minerals Limited, followed by a geological mapping programme (A.F. 92828).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 150-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by a felsic metavolcanic garnet±amphibole gneiss sequence (unit J4b). It is bounded to the east and west by layered to uniform amphibolite (unit J1e). Despite the intense ductile deformation that the rocks in this area have undergone, Norquay *et al.* (1992; 1994a, b) were able to define the depositional character of some of these units. The occurrence is located within a folded sequence of rhyolites, mafic volcanic rocks with banded oxide facies (magnetite) iron formation, basaltic rocks and mafic tuff. The major units show a high degree of internal textural and compositional variability, comprising flows, tuffs, volcanic breccia, possible extrusive rocks with intrusive equivalents, foliated amphibolite and thin felsic units.

The sequence intersected by hole H-37 consists of a variable assemblage of quartz-biotite-amphibole±garnet±magnetite±chlorite±sericite "gneisses" and a feldspar-amphibole-phyric dyke (A.F. 90489). The "gneissic" assemblage is similar to the dominantly supracrustal rocks mapped at surface in the occurrence area, but the detail of the lithologic descriptions for the drill hole is not sufficient to allow direct correlation with the sequence exposed in outcrop.

MINERALIZATION

Mineralized intervals were intersected in hole H-37 as follows (A.F. 90489) (see table below).

Interval	Mineralization
41.8-42.0 m (137.3-137.7 ft.)	"near solid" pyrrhotite, minor pyrite, in foliated "andesite" and biotite-amphibole-garnet and amphibole-magnetite-quartz-chlorite schist
64.0-65.8 m (210.0-216.0 ft.)	"well mineralized" to "near solid" pyrrhotite, minor pyrite, in foliated "andesite" and biotite-amphibole-garnet and amphibole-magnetite-quartz-chlorite schist
91.0-91.1 m (298.5-298.9 ft.)	"well mineralized" pyrite, in quartz-biotite-sericite±garnet±chlorite "gneiss"
103.9-104.2 m (340.9-341.8 ft.)	to "well mineralized" pyrrhotite, trace chalcopyrite, in foliated biotite-garnet "andesite", foliated amphibole-magnetite-quartz-chlorite "gneiss"

GEOCHEMICAL DATA

No assays were reported in the assessment file for these mineralized intervals.

CLASSIFICATION

Stratabound massive sulphide type deposit; volcanic rock associated. This occurrence appears to have an associated hydrothermal alteration zone.

REFERENCES

A.F. 90489 and 92828; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Norquay, L.I., Prouse, D.E., Heine, T.H. and Gale, G.H.

1992: Geological investigations in the North Star Lake area (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1992, pp. 23-27.

Norquay, L.I., Prouse, D.E., and Gale, G.H.

1994a: The North Star Lake project (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1994, pp. 83-84.

1994b: North Star Lake (NTS 63K/15NE1); Cancelled Assessment File, Manitoba Industry, Trade and Mines, Minerals Division, Preliminary Map 1994S-2, 1:10 000.

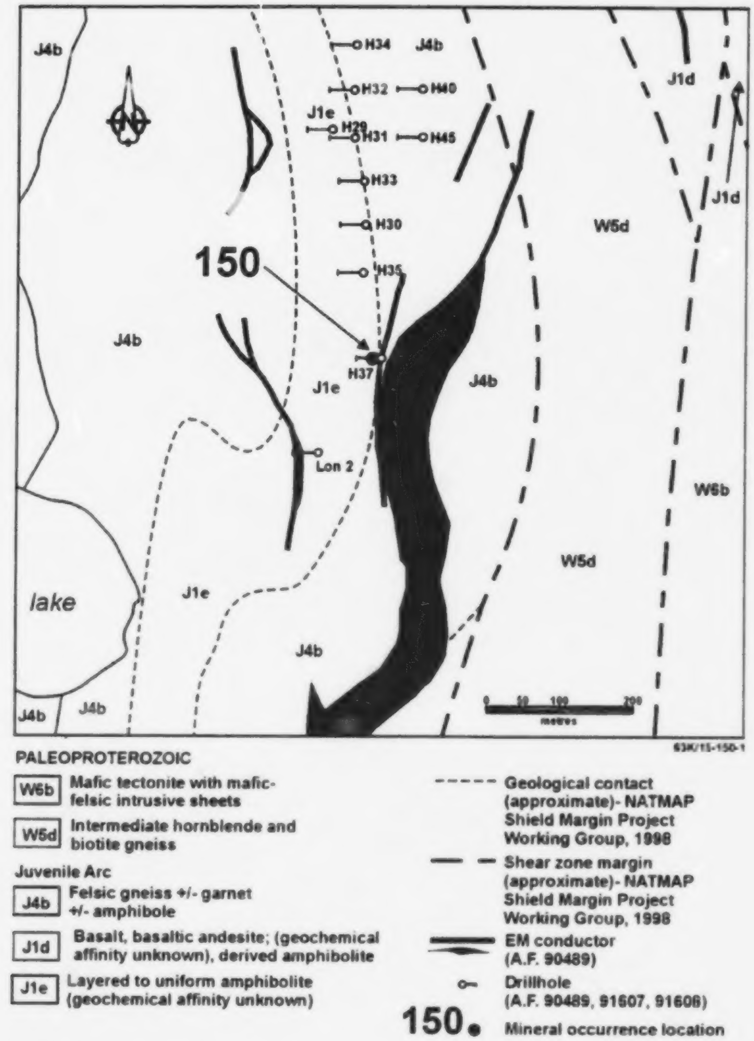

J4b
H34
J4b
H32
H40
J1d
J1e
H29
H31
H45
H33
J1d
H30
W5d
150
H35
J4b
H37
J1e
J4b
Lon 2
W6b
W5d
lake
J1e
J4b
J4b
J4b
0
50
100
200
metres
63K/15-150-1
PALEOPROTEROZOIC
W6b Mafic tectonite with mafic-felsic intrusive sheets
W5d Intermediate hornblende and biotite gneiss
Juvenile Arc
J4b Felsic gneiss +/- garnet +/- amphibole
J1d Basalt, basaltic andesite; (geochemical affinity unknown), derived amphibolite
J1e Layered to uniform amphibolite (geochemical affinity unknown)
Geological contact (approximate)- NATMAP Shield Margin Project Working Group, 1998
Shear zone margin (approximate)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 90489)
Drillhole (A.F. 90489, 91607, 91608)
150
Mineral occurrence location

Figure 150-1: Geological setting of occurrence 150.

LOCATION: 151

NAME:
UTM: 379725E, 6077935N
AREA: along east side of Smith Island, Elbow Lake
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage
AIRPHOTO: MB90025-120

EXPLORATION SUMMARY

No work has been recorded for this occurrence. A trench has been excavated into the side of the ridge close at the shoreline.

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 151-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by schists (unit W6c) of the Elbow Lake shear zone (Galley *et al.*, 1987, 1989; Syme, 1990, 1991, 1992). The structure is approximately 1500 m thick in this area (Syme and Whalen, 1992).

The rocks on Smith Island consist of chlorite and carbonate schists of the Elbow Lake shear zone. The shear zone is crosscut by NNE-trending quartz- and/or feldspar-phyric dykes. Several dioritic sills and/or dykes are also present. The rocks show a strong pervasive penetrative foliation that trends 025° and dips 85°SE. Dyke margins are schistose and some of the thinner feldspar porphyry dykes have been boudinaged. Several areas of carbonate alteration host deformed quartz-carbonate veins.

MINERALIZATION

Stockwell (1935) indicates that quartz veins occur in a quartz porphyry dyke that has been exposed at intervals for approximately 140 m (450 feet) from the north shore of the island. The porphyry is sparsely mineralized with disseminated arsenopyrite and pyrite. Quartz stringers within the porphyry carry minor sphalerite. Galley (field notes, 1987) indicates that the mineralization is associated with strongly hematitic alteration halos around a series of quartz-feldspar veins. The host schist to the porphyry contains deformed quartz veins and disseminated pyrite.

GEOCHEMICAL DATA

None

CLASSIFICATION

Vein type deposit; multiple veins or lenses. Associated with quartz porphyry dyke hosted by schists of the Elbow Lake shear zone.

REFERENCES

Galley, A.G., Ames, D.E. and Franklin, J.M.

1987: Geological setting of gold mineralization in the Elbow Lake region, Manitoba; in Manitoba Energy and Mines, Minerals Division, Report of Field Activities, 1987, pp.175-177.

1989: Results of studies on the gold metallogeny of the Flin Flon belt; in Investigations by the Geological Survey of Canada in Manitoba and Saskatchewan during the 1984-1989 Mineral Development Agreements, Geological Survey of Canada, Open File 2133, pp.25-32.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Stockwell, C.H.

1935: Gold Deposits of the Elbow-Morton Area, Northern Manitoba; Geological Survey of Canada, Memoir 186, 74pp.

Syme, E.C.

1990: Elbow Lake project (part of NTS 63K/15W); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1990, pp.49-57.

1991: Elbow Lake project - Part A: supracrustal rocks and structural setting; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1991, pp.14-27.

1992: Elbow Lake Project - Part A: Supracrustal rocks; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1992, pp.32-46.

Syme, E.C. and Whalen, J.B.

1992: Geology, Elbow Lake, Manitoba; Geological Survey of Canada, Preliminary 1:20 000 map, Shield-Margin Project, File ELBOW92.PS.

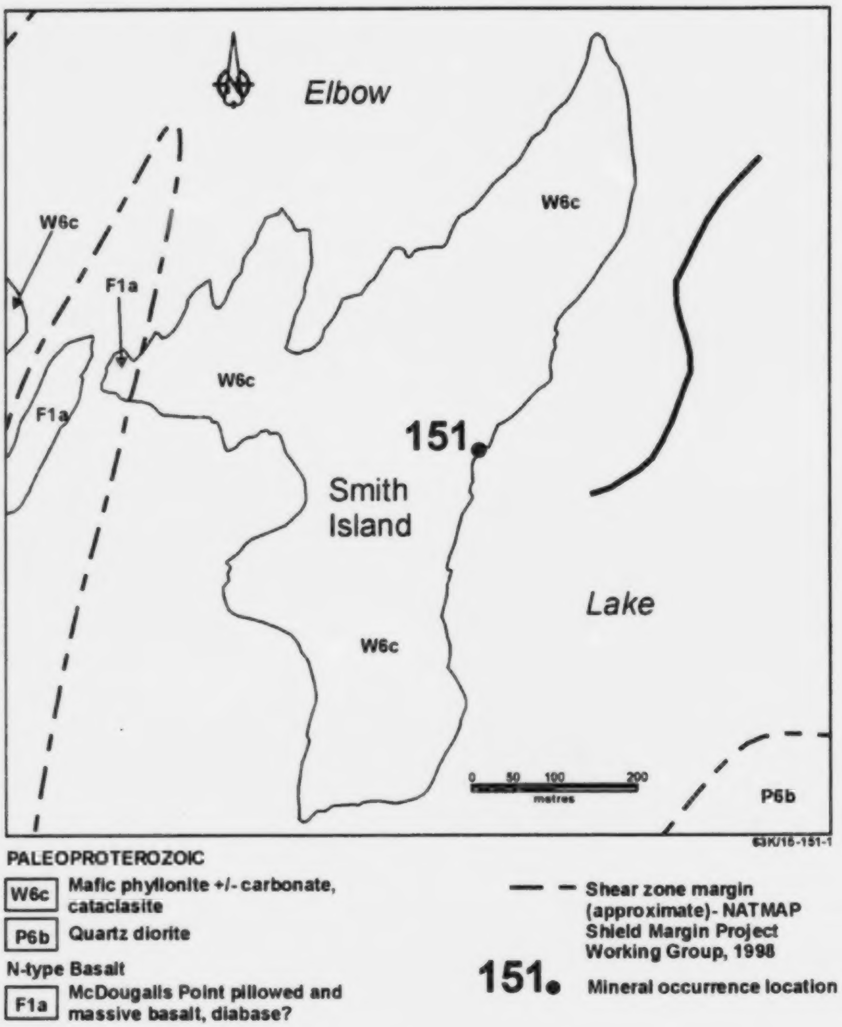

Elbow
W6c
W6c
F1a
W6c
F1a
151
Smith Island
W6c
Lake
0 50 100 200
metres
P6b
63K/16-151-1
PALEOPROTEROZOIC
W6c Mafic phyllonite +/- carbonate, cataclasite
P6b Quartz diorite
N-type Basalt
F1a McDougalls Point pillowed and massive basalt, diabase?
Shear zone margin (approximate)- NATMAP Shield Margin Project Working Group, 1998
151 Mineral occurrence location

Figure 151-1: Geological setting of occurrence 151.

LOCATION: 152

NAME: mineralization intersected by diamond drilling
UTM: 399550E, 6086835N
AREA: approximately 4.4 km SW of Loonhead Lake
ACCESS: via bush aircraft to North Star Lake, by boat along stream north of North Star Lake, then traverse
AIRPHOTO: MB90024-164

EXPLORATION SUMMARY

In 1957 and 1958 Hudson Bay Exploration and Development Company, Limited performed an EM (Loop-Frame equipment) survey. Conductors delineated by this survey were drilled in 1958 (A.F. 90488). In 1981 an airborne EM (INPUT) and magnetic survey was performed for BP Minerals Limited, followed by a geological mapping programme (A.F. 92828).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 152-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by a felsic metavolcanic garnet+amphibole gneiss sequence (unit J4b). It is bounded to the east and west by layered to uniform amphibolite (unit J1e). Despite the intense ductile deformation that the rocks in this area have undergone, Norquay *et al.* (1994a, b) were able to define the depositional character of some of these units. The occurrence is located within a folded sequence of rhyolites, mafic volcanic rocks with banded oxide facies (magnetite) iron formation, basaltic rocks and mafic tuff. The major units show a high degree of internal textural and compositional variability, comprising flows, tuffs, volcanic breccia, possible extrusive rocks with intrusive equivalents, foliated amphibolite and thin felsic units.

Hole E-3 intersected a sequence comprised of amphibole-phyric "andesite" with occasional garnetiferous and chloritic intervals, banded oxide (magnetite) facies iron formation, amphibole-biotite± garnet "gneiss" and quartz diorite (A.F. 90488). The "gneissic" assemblage is similar to the dominantly supracrustal rocks mapped at surface in the occurrence area. Bands of iron formation have been noted in outcrop. The detail of the lithologic descriptions for the drill hole is not sufficient to allow confident correlation of individual units with those exposed in outcrop.

MINERALIZATION

"Near solid" pyrrhotite with minor pyrite were intersected between 26.8-27.0 m (87.9-88.7 ft.) in hole E-3 (A.F. 90488). The sulphide mineralization is hosted by garnetiferous, banded, oxide (magnetite) facies iron formation.

GEOCHEMICAL DATA

No assays were reported in the assessment file for this mineralized interval.

CLASSIFICATION

Chemical sediment type deposit; oxide (magnetite) facies iron formation.

REFERENCES

A.F. 90488 and 92828; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

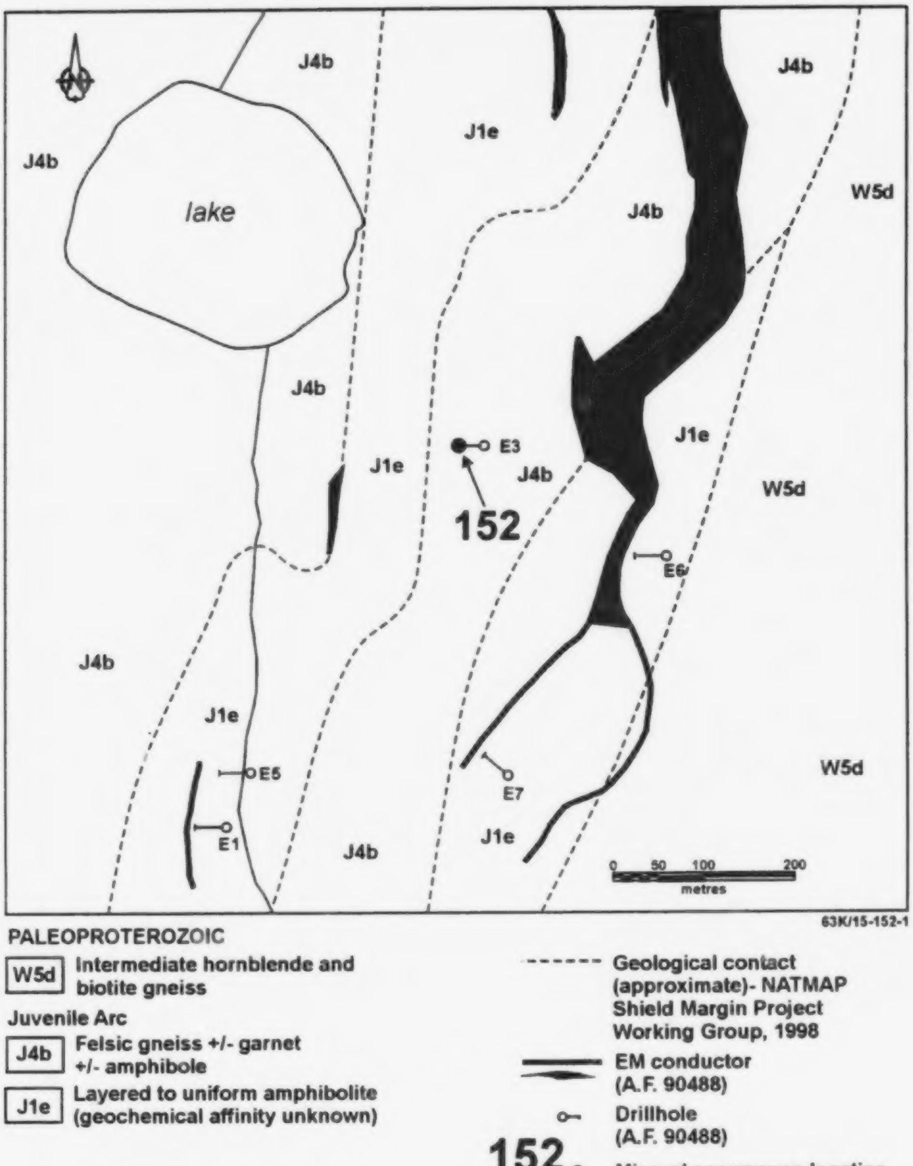
NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Norquay, L.I., Prouse, D.E., and Gale, G.H.

1994a: The North Star Lake project (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1994, pp. 83-84.

1994b: North Star Lake (NTS 63K/15NE1); Cancelled Assessment File, Manitoba Industry, Trade and Mines, Minerals Division, Preliminary Map 1994S-2, 1:10 000.



J4b
J4b
J1e
J4b
lake
W5d
J4b
J4b
J1e
E3
J1e
J4b
W5d
152
E6
J4b
J1e
E5
W5d
E7
E1
J4b
J1e
0 50 100 200
metres
63K/15-152-1
PALEOPROTEROZOIC
W5d Intermediate hornblende and biotite gneiss
Juvenile Arc
J4b Felsic gneiss +/- garnet +/- amphibole
J1e Layered to uniform amphibolite (geochemical affinity unknown)
Geological contact (approximate)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 90488)
Drillhole (A.F. 90488)
152 Mineral occurrence location

Figure 152-1: Geological setting of occurrence 152.

LOCATION: 153

NAME: mineralization intersected by diamond drilling
UTM: 399690E, 6086615N
AREA: approximately 4.6 km SW of Loonhead Lake
ACCESS: via bush aircraft to North Star Lake, by boat along stream north of North Star Lake, then traverse
AIRPHOTO: MB90024-164

EXPLORATION SUMMARY

In 1957 and 1958 Hudson Bay Exploration and Development Company, Limited performed an EM (Loop-Frame equipment) survey. Conductors delineated by this survey were drilled in 1958 (A.F. 90488). In 1981 an airborne EM (INPUT) and magnetic survey was performed for BP Minerals Limited, followed by a geological mapping programme (A.F. 92828).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 153-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by layered to uniform amphibolite (unit J1e). It is bounded to the west by a felsic metavolcanic garnet+amphibole gneiss sequence (unit J4b). Rocks of the West Reed-North Star shear zone (unit W5d) occur to the east of the occurrence. Despite the intense ductile deformation that the rocks in this area have undergone, Norquay *et al.* (1992, 1994a, b) were able to define the depositional character of some of these units. The occurrence is located within a folded sequence of mafic volcanic rocks with banded oxide facies (magnetite) iron formation, rhyolites, basaltic rocks and mafic tuff. The major units show a high degree of internal textural and compositional variability, comprising flows, tuffs, volcanic breccia, possible extrusive rocks with intrusive equivalents, foliated amphibolite and thin felsic units.

The sequence intersected by hole E-6 consists of a series of fine-grained amphibole-biotite-garnet±chlorite "gneisses" with minor "quartzite" and "andesite" (A.F. 90488). The "gneissic" assemblage is similar to the dominantly supracrustal rocks mapped at surface in the occurrence area. The detail in the lithologic description for the drill core is not sufficient to allow correlation with units exposed in outcrop.

MINERALIZATION

Mineralized intervals were intersected in hole E-6 as follows (A.F. 90488) (see table below).

Interval	Mineralization
17.7-18.4 m (58.0-60.5 ft.)	"slight to near solid" pyrite, minor pyrrhotite in siliceous, fine grained amphibole-biotite-garnet "gneiss"
38.7-51.9 m (127.0-170.4 ft.)	"near solid to solid" pyrrhotite, minor pyrite, trace sphalerite, chalcopyrite, arsenopyrite, minor graphite, in fine-grained amphibole-biotite-garnet "gneiss"
55.0-60.0 m (180.4-196.9 ft.)	"slight" to "solid" pyrrhotite, trace sphalerite, chalcopyrite, in siliceous, fine-grained amphibole-biotite-garnet±chlorite "gneiss"
78.8-79.5 m (258.6-260.9 ft.)	"slight" to "near solid" pyrrhotite, trace sphalerite, chalcopyrite, in fine-grained amphibole-biotite-garnet±chlorite "gneiss"

GEOCHEMICAL DATA

No assays were reported in the assessment file for these mineralized intervals.

CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation.

REFERENCES

A.F. 90488 and 92828; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Norquay, L.I., Prouse, D.E., Heine, T.H. and Gale, G.H.

1992: Geological investigations in the North Star Lake area (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1992, pp. 23-27.

Norquay, L.I., Prouse, D.E., and Gale, G.H.

1994a: The North Star Lake project (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1994, pp. 83-84.

1994b: North Star Lake (NTS 63K/15NE1); Cancelled Assessment File, Manitoba Industry, Trade and Mines, Minerals Division, Preliminary Map 1994S-2, 1:10 000.

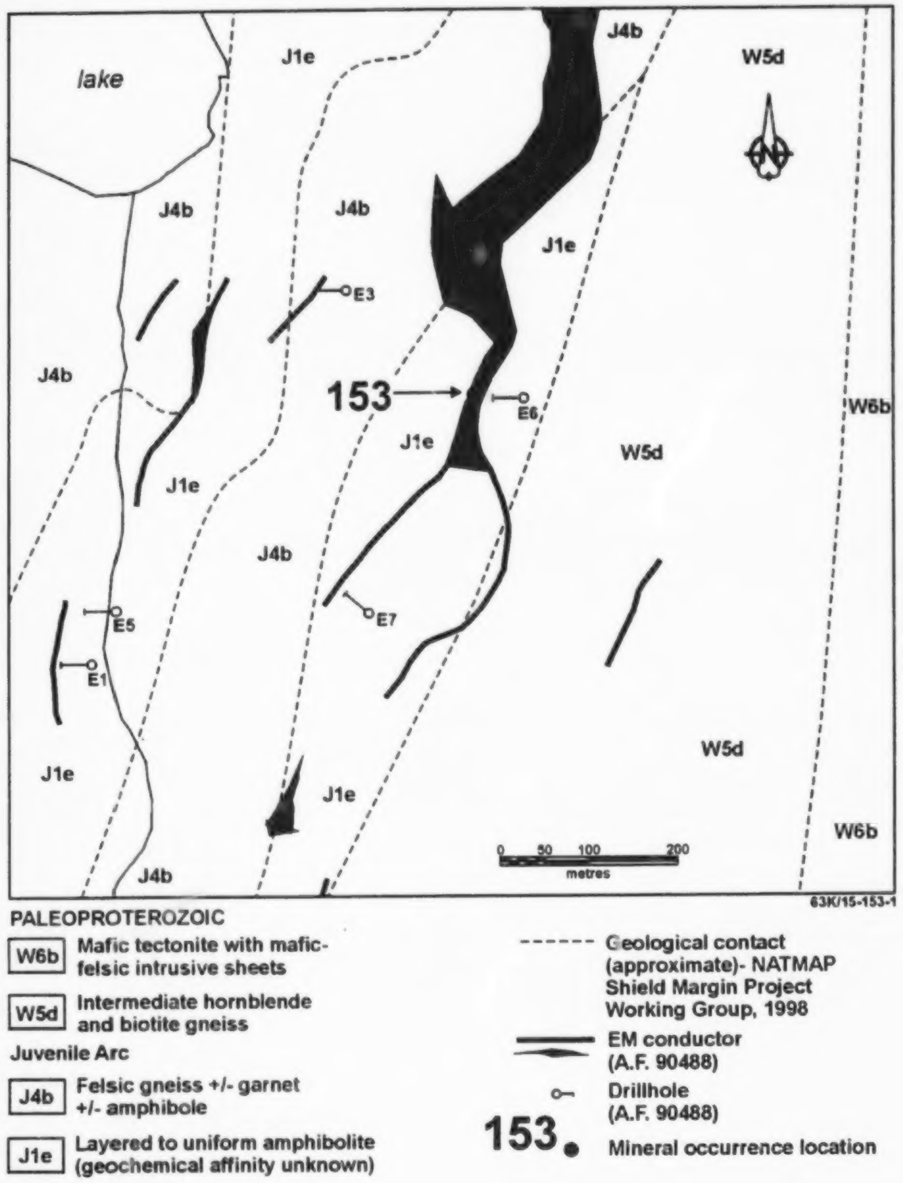

lake
J1e
J4b
W5d
J4b
J4b
J1e
E3
J4b
153
E6
W6b
J1e
W5d
J1e
J4b
E5
E7
E1
W5d
J1e
J1e
W6b
0 50 100 200
metres
J4b
63K/15-153-1
PALEOPROTEROZOIC
W6b
Mafic tectonite with mafic-felsic intrusive sheets
W5d
Intermediate hornblende and biotite gneiss
Juvenile Arc
J4b
Felsic gneiss +/- garnet +/- amphibole
J1e
Layered to uniform amphibolite (geochemical affinity unknown)
Geological contact (approximate)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 90488)
Drillhole (A.F. 90488)
153
Mineral occurrence location

Figure 153-1: Geological setting of occurrence 153.

LOCATION: 154

NAME: mineralization intersected by diamond drilling

UTM: 399280E, 6086455N

AREA: approximately 7.4 km north of North Star Lake

ACCESS: via bush aircraft to North Star Lake, by boat along stream north of North Star Lake, then traverse

AIRPHOTO: MB90024-164

EXPLORATION SUMMARY

In 1957 and 1958 Hudson Bay Exploration and Development Company, Limited performed an EM (Loop-Frame equipment) survey. Conductors delineated by this survey were drilled in 1958 (A.F. 90488). In 1981 an airborne EM (INPUT) and magnetic survey was performed for BP Minerals Limited, followed by a geological mapping programme (A.F. 92828).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 154-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by layered to uniform amphibolite (unit J1e). This assemblage is bounded by two rhyolitic units (unit J4b), the Lower and Upper rhyolite to the west and east, respectively (Norquay *et al.*, 1994a, b). Despite the intense ductile deformation that the rocks in this area have undergone, Norquay *et al.* (1992, 1994a, b) were able to define the depositional character of some of these units. The occurrence is located within a folded sequence of mafic volcanic rocks with banded oxide facies (magnetite) iron formation, rhyolites, basaltic rocks and mafic tuff. The major units show a high degree of internal textural and compositional variability, comprising flows, tuffs, volcanic breccia, possible extrusive rocks with intrusive equivalents, foliated amphibolite and thin felsic units.

Holes E-1 and -5 intersected a sequence of amphibole-biotite-garnet±chlorite±quartz "gneisses" and schistose units, with lesser "quartzite", quartz diorite and amphibole-phyric "andesite" intervals. (A.F. 90488). The "gneissic" assemblage is similar to the dominantly supracrustal rocks mapped at surface in the occurrence area. The detail in the lithologic description for the drill core is not sufficient to allow correlation with units exposed in outcrop.

MINERALIZATION

Mineralized intervals were intersected in holes E-1 and -5 as follows (A.F. 90488) (see table below).

Hole No.	Interval	Mineralization
E-1	52.1-58.9 m (171.0-193.3 ft.)	"well mineralized to near solid" pyrrhotite, slight pyrite, trace sphalerite, chalcopyrite, in schistose, siliceous amphibole-biotite-garnet-chlorite "gneiss"
E-5	75.9-80.9 m (248.9-265.4 ft.)	"slight" to "near solid" pyrite, pyrrhotite, trace sphalerite, chalcopyrite, in chlorite-amphibole-biotite-garnet schist to "gneiss"

GEOCHEMICAL DATA

No assays were reported in the assessment file for these mineralized intervals.

CLASSIFICATION

Massive sulphide type deposit; volcanic rock associated. This occurrence appears to have an associated hydrothermal alteration zone, suggested by the presence of chloritic rock types.

REFERENCES

A.F. 90488 and 92828; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Norquay, L.I., Prouse, D.E., Heine, T.H. and Gale, G.H.

1992: Geological investigations in the North Star Lake area (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1992, pp. 23-27.

Norquay, L.I., Prouse, D.E., and Gale, G.H.

1994a: The North Star Lake project (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1994, pp. 83-84.

1994b: North Star Lake (NTS 63K/15NE1); Cancelled Assessment File, Manitoba Industry, Trade and Mines, Minerals Division, Preliminary Map 1994S-2, 1:10 000.

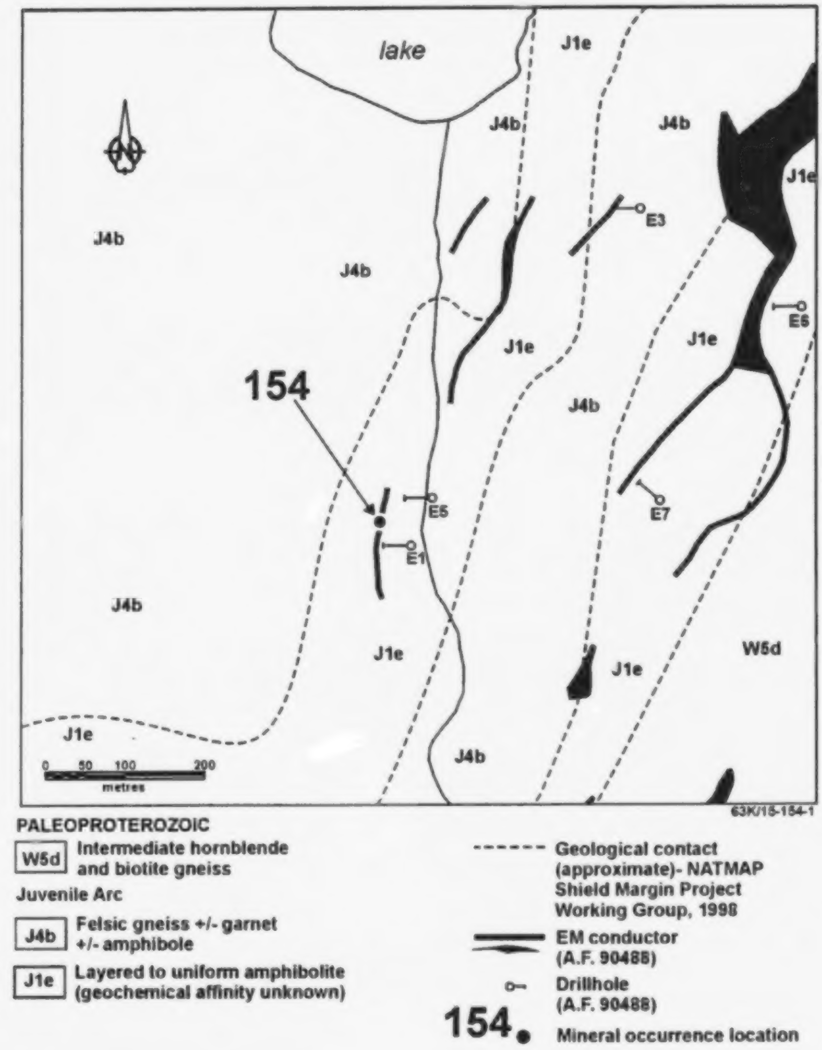

lake
J1e
J4b
J4b
J1e
J4b
J4b
E3
E6
J1e
J1e
154
J4b
E5
E1
E7
J4b
W5d
J1e
J1e
J1e
J4b
0 50 100 200
metres
63K/16-154-1
PALEOPROTEROZOIC
W5d Intermediate hornblende and biotite gneiss
Juvenile Arc
J4b Felsic gneiss +/- garnet +/- amphibole
J1e Layered to uniform amphibolite (geochemical affinity unknown)
Geological contact (approximate)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 90488)
Drillhole (A.F. 90488)
154 Mineral occurrence location

Figure 154-1: Geological setting of occurrence 154.

LOCATION: 155

NAME: mineralization intersected by diamond drilling
UTM: 398755E, 6085290N
AREA: approximately 5.9 km SW of Loonhead Lake
ACCESS: via bush aircraft to North Star Lake, by boat along stream north of North Star Lake, then traverse
AIRPHOTO: MB90024-164

EXPLORATION SUMMARY

In 1957 and 1958 Hudson Bay Exploration and Development Company, Limited performed an EM (Loop-Frame equipment) survey. Conductors delineated by this survey were drilled in 1958 (A.F. 90488). In 1981 an airborne EM (INPUT) and magnetic survey was performed for BP Minerals Limited, followed by a geological mapping programme (A.F. 92828).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 155-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998).

The area is underlain by intermediate to mafic metavolcanic and metasedimentary rocks (grouped under unit J1e). This assemblage is bounded by two rhyolitic units (unit J4b), the Lower and Upper rhyolite to the west and east, respectively (Norquay *et al.*, 1994a, b). Despite the intense ductile deformation that the rocks in this area have undergone, Norquay *et al.* (1992, 1994a, b) were able to define the depositional character of some of these units. The occurrence is located within a folded sequence of mafic volcanic rocks with banded oxide facies (magnetite) iron formation, rhyolites, basaltic rocks and mafic tuff. The major units show a high degree of internal textural and compositional variability, comprising flows, tuffs, volcanic breccia, possible extrusive rocks with intrusive equivalents, foliated amphibolite and thin felsic units.

The sequence intersected by hole EFF-20 consists of siliceous garnetiferous "andesite" with some chloritic and magnetite-bearing intervals, amphibole-biotite-garnet±quartz±chlorite±magnetite±feldspar "gneisses" and schistose equivalents (A.F. 90488).

MINERALIZATION

An interval containing up to "near solid" pyrrhotite with lesser pyrite and traces of sphalerite and chalcopyrite was intersected between 49.1-50.6 m (161.0-166.0 ft.) in hole EFF 20 (A.F. 90488). Minor graphite is also present in this interval. The host rock for the mineralization is amphibole-biotite-garnet± quartz±chlorite schist.

GEOCHEMICAL DATA

No assays were reported in the assessment file for this mineralized interval.

CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation.

REFERENCES

A.F. 90488 and 92828; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Norquay, L.I., Prouse, D.E., Heine, T.H. and Gale, G.H.

1992: Geological investigations in the North Star Lake area (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1992, pp. 23-27.

Norquay, L.I., Prouse, D.E., and Gale, G.H.

1994a: The North Star Lake project (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1994, pp. 83-84.

1994b: North Star Lake (NTS 63K/15NE1); Cancelled Assessment File, Manitoba Industry, Trade and Mines, Minerals Division, Preliminary Map 1994S-2, 1:10 000.

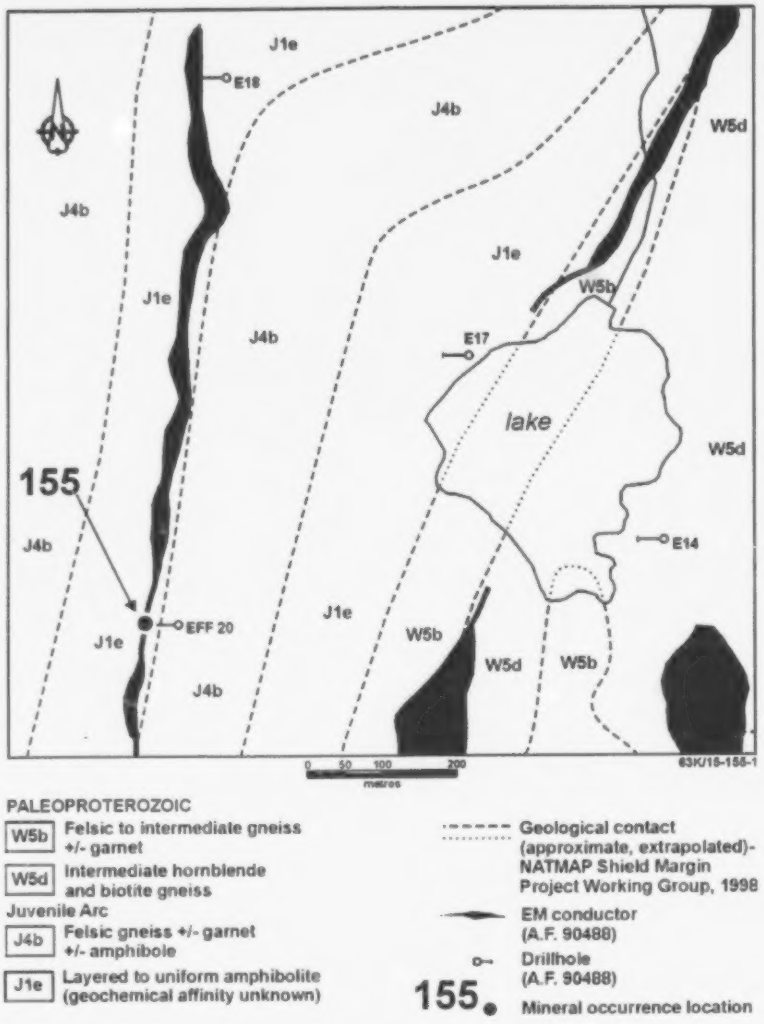

J1e
E18
J4b
W5d
J4b
J1e
J1e
J4b
W5b
E17
lake
W5d
155
J4b
E14
J1e
EFF 20
J1e
W5b
W5d
W5b
J4b
0 50 100 200
metres
63K/16-155-1
PALEOPROTEROZOIC
W5b Felsic to intermediate gneiss +/- garnet
W5d Intermediate hornblende and biotite gneiss
Juvenile Arc
J4b Felsic gneiss +/- garnet +/- amphibole
J1e Layered to uniform amphibolite (geochemical affinity unknown)
Geological contact (approximate, extrapolated)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 90488)
Drillhole (A.F. 90488)
155 Mineral occurrence location

Figure 155-1: Geological setting of occurrence 155.

LOCATION: 156

NAME:
UTM: 379585E, 6077880N
AREA: Smith Island, Elbow Lake
ACCESS: via bush aircraft, or by boat through the Cranberry Lakes from Cranberry Portage
AIRPHOTO: MB90025-120

EXPLORATION SUMMARY

This occurrence was staked in 1933 by Mr James A. Smith (Stockwell, 1935). Several pits were excavated, but no work has been recorded since that time.

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 156-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by schists (unit W6c) of the Elbow Lake shear zone (Galley *et al.*, 1987, 1989; Syme, 1990, 1991, 1992). The structure is approximately 1500 m thick in this area (Syme and Whalen, 1994).

The rocks on Smith Island consist of chlorite and carbonate schists of the Elbow Lake shear zone. The shear zone is crosscut by NNE-trending quartz- and/or feldspar-phyric dykes. Several dioritic sills and/or dykes are also present. The rocks show a strong pervasive penetrative foliation that trends 025° and dips 85°SE. Dyke margins are schistose and some of the thinner porphyry dykes have been boudinaged. Several areas of carbonate-altered mafic schist host deformed quartz-carbonate veins.

MINERALIZATION

A discontinuous quartz vein is exposed in a trench along the west shore of the island. The host schist contains deformed quartz veins and disseminated pyrite.

GEOCHEMICAL DATA

None

CLASSIFICATION

Vein type deposit; multiple veins or lenses. Associated with schists of the Elbow Lake shear zone.

REFERENCES

A.F. 91487 and 92654; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

Galley, A.G., Ames, D.E. and Franklin, J.M.

1987: Geological setting of gold mineralization in the Elbow Lake region, Manitoba; in Manitoba Energy and Mines, Minerals Division, Report of Field Activities, 1987, pp.175-177.

1989: Results of studies on the gold metallogeny of the Flin Flon belt; in Investigations by the Geological Survey of Canada in Manitoba and Saskatchewan during the 1984-1989 Mineral Development Agreements, Geological Survey of Canada, Open File 2133, pp.25-32.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Stockwell, C.H.

1935: Gold Deposits of the Elbow-Morton Area, Northern Manitoba; Geological Survey of Canada, Memoir 186, 74pp.

Syme, E.C.

1990: Elbow Lake project (part of NTS 63K/15W); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1990, pp.49-57.

1991: Elbow Lake project - Part A: supracrustal rocks and structural setting; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1991, pp.14-27.

1992: Elbow Lake Project - Part A: Supracrustal rocks; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1992, pp.32-46.

Syme, E.C. and Whalen, J.B.

1992: Geology, Elbow Lake, Manitoba; Geological Survey of Canada, Preliminary 1:20 000 map, Shield-Margin Project, File ELBOW92.PS.

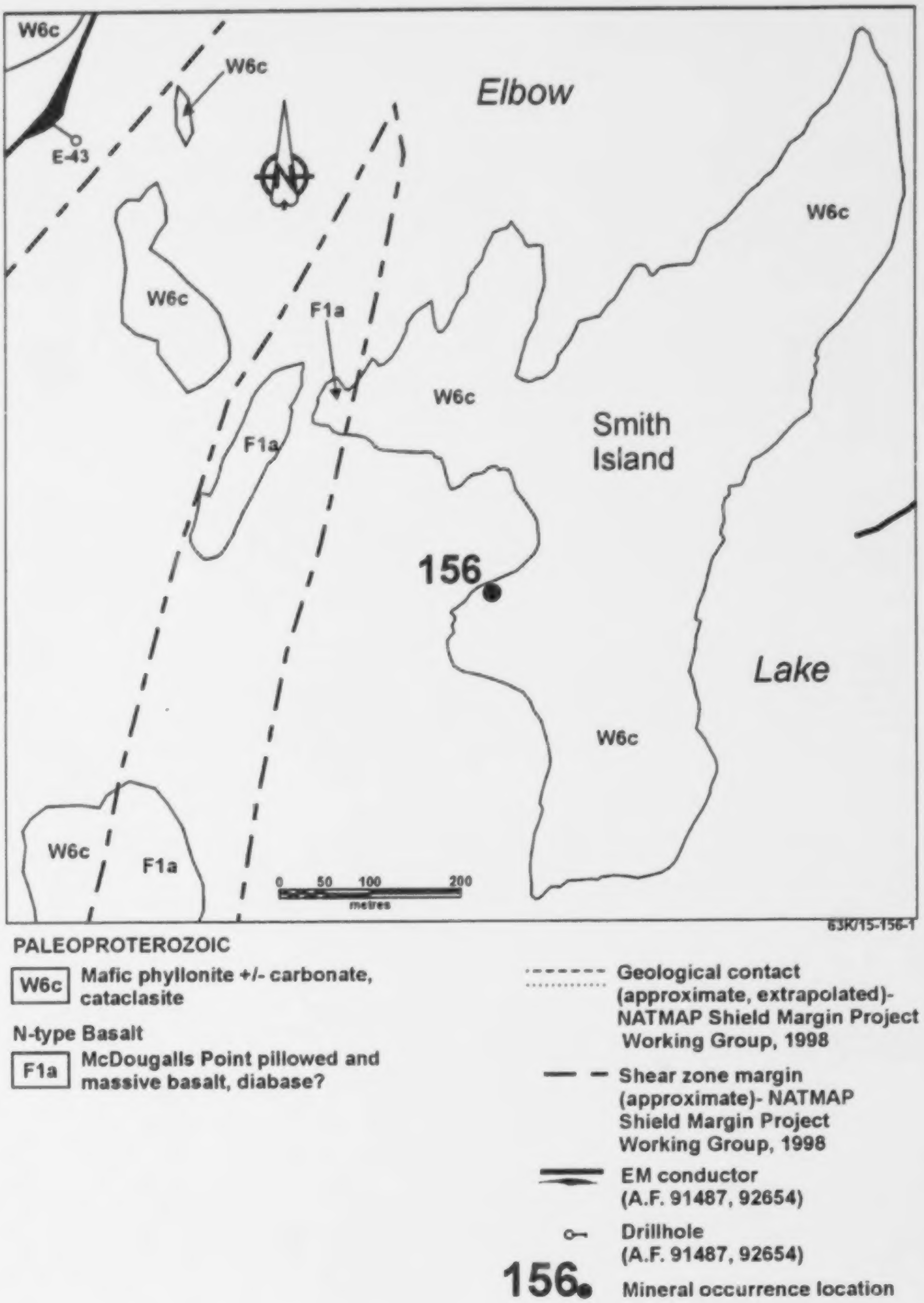

W6c
W6c
E-43
Elbow
W6c
W6c
F1a
W6c
F1a
Smith Island
156
Lake
W6c
W6c
F1a
0 50 100 200
metres
63K/15-156-1
PALEOPROTEROZOIC
W6c Mafic phyllonite +/- carbonate, cataclasite
N-type Basalt
F1a McDougalls Point pillowed and massive basalt, diabase?
Geological contact (approximate, extrapolated)- NATMAP Shield Margin Project Working Group, 1998
Shear zone margin (approximate)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 91487, 92654)
Drillhole (A.F. 91487, 92654)
156 Mineral occurrence location

Figure 156-1: Geological setting of occurrence 156.

LOCATION: 157

NAME: mineralization intersected by diamond drilling
UTM: 399575E, 6086225N
AREA: approximately 6.8 km N of North Star Lake
ACCESS: via bush aircraft to North Star Lake, by boat along stream north of North Star Lake, then traverse
AIRPHOTO: MB90024-164

EXPLORATION SUMMARY

In 1957 and 1958 Hudson Bay Exploration and Development Company, Limited performed an EM (Loop-Frame equipment) survey. Conductors delineated by this survey were drilled in 1958 (A.F. 90488). In 1981 an airborne EM (INPUT) and magnetic survey was performed for BP Minerals Limited, followed by a geological mapping programme (A.F. 92828).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 157-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by intermediate to mafic metavolcanic and metasedimentary rocks (grouped under unit J1e). This assemblage is bounded to the west by a rhyolitic unit (unit J4b), the Upper rhyolite (Norquay *et al.*, 1994a, b), and to the east by rocks associated with the West Reed-North Star shear zone (unit W5d). Despite the intense ductile deformation that the rocks in this area have undergone, Norquay *et al.* (1992, 1994a, b) were able to define the depositional character of some of these units. The occurrence is located within a folded metamorphosed sequence of mafic volcanic rocks with banded oxide facies (magnetite) iron formation, rhyolites, basaltic rocks and mafic tuff. The major units show a high degree of internal textural and compositional variability, comprising flows, tuffs, volcanic breccia, possible extrusive rocks with intrusive equivalents, foliated amphibolite and thin felsic units.

The sequence intersected by hole E-12 consists of fine-grained quartz-amphibole-biotite-garnet±sericite "gneisses" (A.F. 90488).

MINERALIZATION

Mineralized intervals were intersected in hole E-12 as follows (A.F. 90488) (see table below).

Interval	Mineralization
9.6-10.2 m (31.6-33.4 ft.)	"mineralized to well mineralized" with pyrite, possibly graphitic, in fine-grained quartz-amphibole-biotite-garnet "gneiss"
34.1-36.2 m (111.8-118.7 ft.)	"near solid" pyrite, trace sphalerite, chalcopyrite, in siliceous, fine grained quartz-amphibole-biotite-garnet±sericite "gneiss"
104.0-111.9 m (341.2-367.1 ft.)	to "near solid" pyrrhotite, minor pyrite, trace sphalerite, chalcopyrite, poorly graphitic, in fine-grained quartz-amphibole-biotite-garnet "gneiss"
147.4-147.5 m (483.5-484.0 ft.)	"near solid" pyrrhotite, at contact fine-grained amphibolite "gneiss" with quartz-amphibole-biotite-garnet "gneiss"

GEOCHEMICAL DATA

No assays were reported in the assessment file for these mineralized intervals.

CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation.

REFERENCES

A.F. 90488 and 92828; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Norquay, L.I., Prouse, D.E., Heine, T.H. and Gale, G.H.

1992: Geological investigations in the North Star Lake area (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1992, pp. 23-27.

Norquay, L.I., Prouse, D.E., and Gale, G.H.

1994a: The North Star Lake project (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1994, pp. 83-84.

1994b: North Star Lake (NTS 63K/15NE1); Cancelled Assessment File, Manitoba Industry, Trade and Mines, Minerals Division, Preliminary Map 1994S-2, 1:10 000.

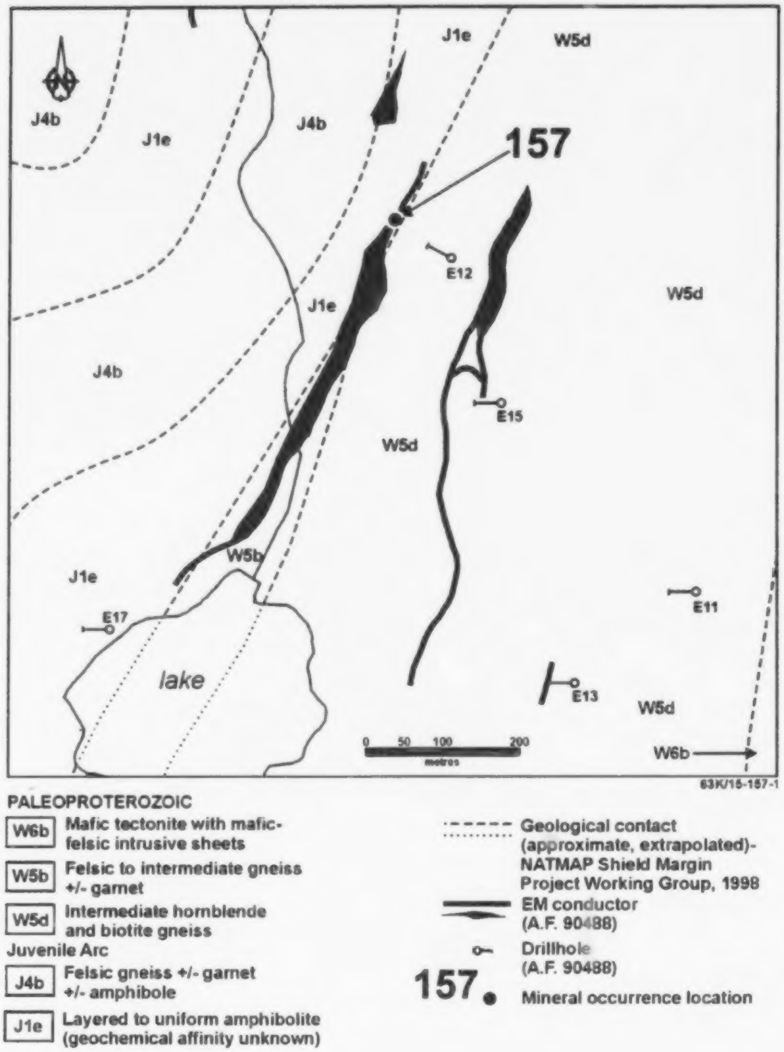

J4b
J1e
J4b
J1e
W5d
157
E12
W5d
J1e
J4b
E15
W5d
W5b
J1e
E17
lake
E11
E13
W5d
0 50 100 200
metres
W6b
63K/16-157-1
PALEOPROTEROZOIC
W6b Mafic tectonite with mafic-felsic intrusive sheets
W5b Felsic to intermediate gneiss +/- garnet
W5d Intermediate hornblende and biotite gneiss
Juvenile Arc
J4b Felsic gneiss +/- garnet +/- amphibole
J1e Layered to uniform amphibolite (geochemical affinity unknown)
Geological contact (approximate, extrapolated)-NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 90488)
Drillhole (A.F. 90488)
157 Mineral occurrence location

Figure 157-1: Geological setting of occurrence 157.

LOCATION: 158

NAME: mineralization intersected by diamond drilling
UTM: 399630E, 6085885N
AREA: approximately 6.6 km N of North Star Lake
ACCESS: via bush aircraft to North Star Lake, by boat along stream north of North Star Lake, then traverse
AIRPHOTO: MB90024-164

EXPLORATION SUMMARY

In 1957 and 1958 Hudson Bay Exploration and Development Company, Limited performed an EM (Loop-Frame equipment) survey. Conductors delineated by this survey were drilled in 1958 (A.F. 90488). In 1981 an airborne EM (INPUT) and magnetic survey was performed for BP Minerals Limited, followed by a geological mapping programme (A.F. 92828).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 158-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by felsic to intermediate gneisses±garnet (unit W5d) associated with the West Reed-North Star (WRNS) shear zone. This assemblage is bounded to the west by a rhyolitic unit (unit J4b), the Upper rhyolite (Norquay *et al.*, 1994a, b), and to the east by a mafic tectonite (unit W6b), also related to the WRNS shear zone. Despite the intense ductile deformation that the rocks in this area have undergone, Norquay *et al.* (1992, 1994a, b) were able to define the depositional character of some of these units. The occurrence is located within a folded metamorphosed sequence of mafic volcanic rocks with banded oxide facies (magnetite) iron formation, rhyolites, basaltic rocks and mafic tuff. The major units show a high degree of internal textural and compositional variability, comprising flows, tuffs, volcanic breccia, possible extrusive rocks with intrusive equivalents, foliated amphibolite and thin felsic units.

Hole E-15 intersected a sequence of quartz-biotite-amphibole-garnet±feldspar "gneisses", "andesite" and garnetiferous mafic dykes (A.F. 90488). Graphite may be a minor constituent in one of the units.

MINERALIZATION

Two intervals of "near solid" pyrrhotite were intersected in hole E-15 between 80.6-80.8 m (264.5-265.2 ft.) and 98.1-98.4 m (321.8-322.8 ft.) (A.F. 90488). The host rock is quartz-amphibole-biotite-garnet "gneiss".

GEOCHEMICAL DATA

No assays were reported in the assessment file for these mineralized intervals.

CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation.

REFERENCES

A.F. 90488 and 92828; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Norquay, L.I., Prouse, D.E., Heine, T.H. and Gale, G.H.

1992: Geological investigations in the North Star Lake area (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1992, pp. 23-27.

Norquay, L.I., Prouse, D.E., and Gale, G.H.

1994a: The North Star Lake project (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1994, pp. 83-84.

1994b: North Star Lake (NTS 63K/15NE1); Cancelled Assessment File, Manitoba Industry, Trade and Mines, Minerals Division, Preliminary Map 1994S-2, 1:10 000.

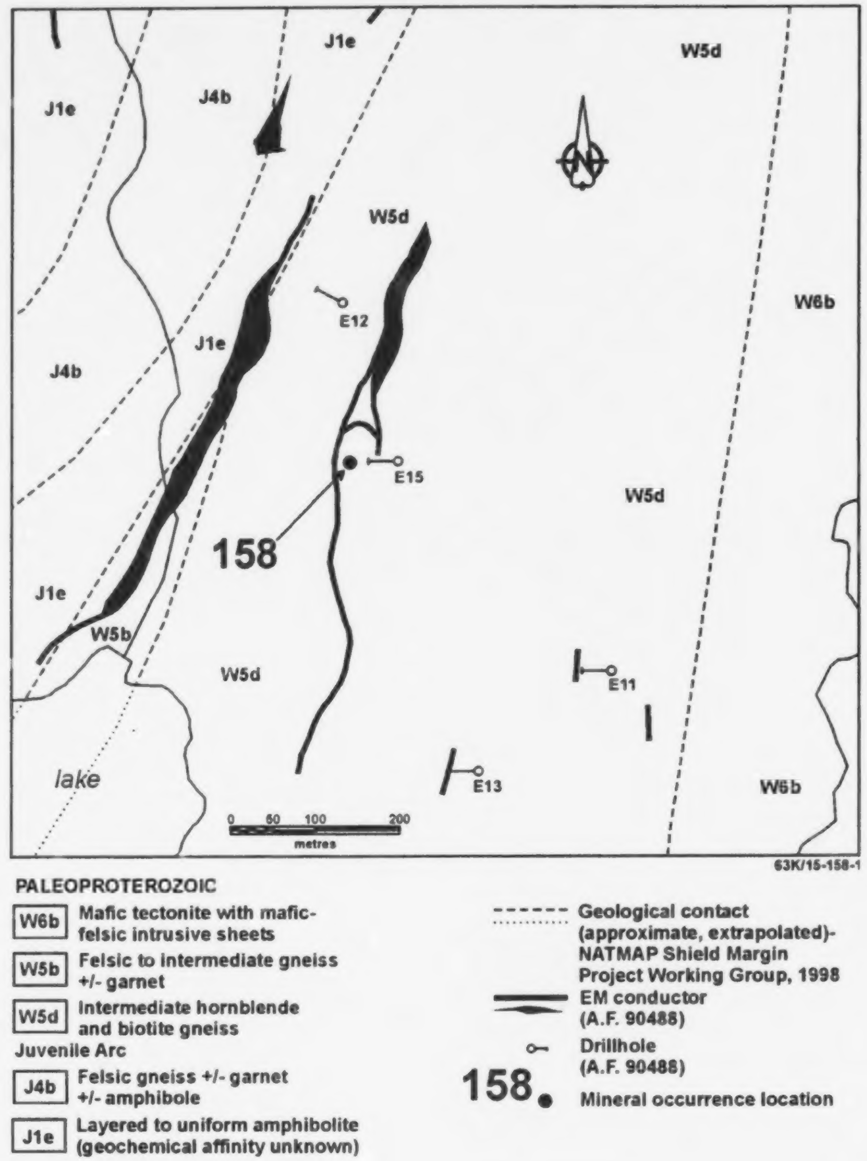

J1e
J1e
J4b
W5d
W5d
W6b
J1e
E12
J4b
E15
158
W5d
J1e
W5b
W5d
E11
E13
W6b
lake
0 50 100 200
metres
63K/15-158-1
PALEOPROTEROZOIC
W6b Mafic tectonite with mafic-felsic intrusive sheets
W5b Felsic to intermediate gneiss +/- garnet
W5d Intermediate hornblende and biotite gneiss
Juvenile Arc
J4b Felsic gneiss +/- garnet +/- amphibole
J1e Layered to uniform amphibolite (geochemical affinity unknown)
Geological contact (approximate, extrapolated)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 90488)
Drillhole (A.F. 90488)
158 Mineral occurrence location

Figure 158-1: Geological setting of occurrence 158.

LOCATION: 159

NAME: mineralization intersected by diamond drilling
UTM: 399890E, 6085635N
AREA: approximately 6.4 km N of North Star Lake
ACCESS: via bush aircraft to North Star Lake, by boat along stream north of North Star Lake, then traverse
AIRPHOTO: MB90024-164

EXPLORATION SUMMARY

In 1957 and 1958 Hudson Bay Exploration and Development Company, Limited performed an EM (Loop-Frame equipment) survey. Conductors delineated by this survey were drilled in 1958 (A.F. 90488). In 1981 an airborne EM (INPUT) and magnetic survey was performed for BP Minerals Limited, followed by a geological mapping programme (A.F. 92828).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 159-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by intermediate hornblende and biotite gneiss (unit W5d). Mafic tectonite (unit W6b) containing mafic to felsic intrusive sheets occurs to the east. These rocks are associated with the West Reed-North Star shear zone (unit W5d) (Syme *et al.*, 1995a, b). Despite the intense ductile deformation that the rocks in this area have undergone, Norquay *et al.* (1992, 1994a, b) were able to define the depositional character of some of these units. The occurrence area is underlain by amphibolite with abundant epidote±quartz lenses. A quartz-rich amphibolite occurs to the east. Thin felsic arenitic rocks occur as discontinuous, tectonically attenuated, units within this part of the stratigraphy. Mafic intrusions(?) are also present.

Hole E-11 intersected foliated amphibole-plagioclase±biotite±garnet "gneiss" (A.F. 90488), similar to the unit exposed at surface.

MINERALIZATION

A single "near solid" pyrrhotite layer with minor pyrite was intersected in hole E-11 between 42.4-42.9 m (139.0-140.8 ft.) (A.F. 90488). It is hosted by fine-grained, siliceous amphibole-feldspar-biotite "gneiss".

GEOCHEMICAL DATA

No assays were reported in the assessment file for these mineralized intervals.

CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation.

REFERENCES

A.F. 90488 and 92828; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Norquay, L.I., Prouse, D.E., Heine, T.H. and Gale, G.H.

1992: Geological investigations in the North Star Lake area (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1992, pp. 23-27.

Norquay, L.I., Prouse, D.E., and Gale, G.H.

1994a: The North Star Lake project (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1994, pp. 83-84.

1994b:North Star Lake (NTS 63K/15NE1); Cancelled Assessment File, Manitoba Industry, Trade and Mines, Minerals Division, Preliminary Map 1994S-2, 1:10 000.

Syme, E.C., Bailes, A.H. and Lucas, S.B.

1995a: Geology of the Reed Lake area (Parts of 63K/9 and 10); in Manitoba Energy and Mines, Minerals division, Report of Activities, 1995, pp. 42-60.

1995b: Geology of the Reed Lake area (Parts of 63K/9 and 10); in Manitoba Energy and Mines, Minerals Division, Preliminary Map 1995F-1, 1:50 000.

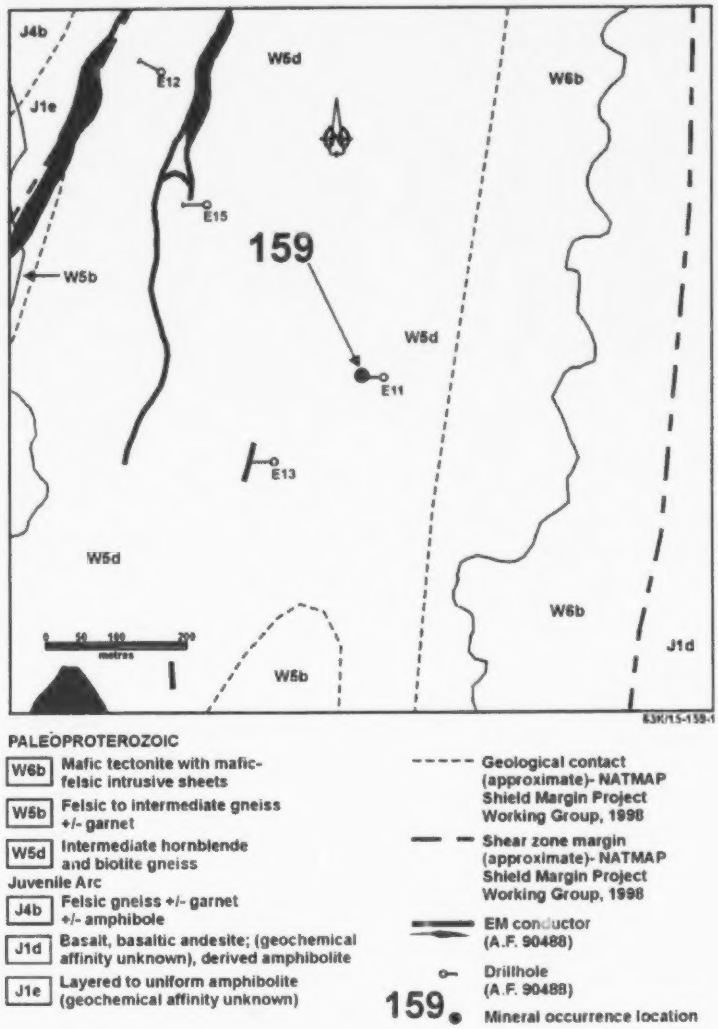

J4b
J1e
E12
W5d
W6b
E15
159
W5b
W5d
E11
E13
W5d
0 50 100 200
metres
W5b
W6b
J1d
63K/15-159-1
PALEOPROTEROZOIC
W6b Mafic tectonite with mafic-felsic intrusive sheets
W5b Felsic to intermediate gneiss +/- garnet
W5d Intermediate hornblende and biotite gneiss
Juvenile Arc
J4b Felsic gneiss +/- garnet +/- amphibole
J1d Basalt, basaltic andesite; (geochemical affinity unknown), derived amphibolite
J1e Layered to uniform amphibolite (geochemical affinity unknown)
Geological contact (approximate)- NATMAP Shield Margin Project Working Group, 1998
Shear zone margin (approximate)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 90488)
Drillhole (A.F. 90488)
159 Mineral occurrence location

Figure 159-1: Geological setting of occurrence 159.

LOCATION: 160

NAME: mineralization intersected by diamond drilling
UTM: 399740E, 6085515N
AREA: approximately 6.3 km N of North Star Lake
ACCESS: via bush aircraft to North Star Lake, by boat along stream north of North Star Lake, then traverse
AIRPHOTO: MB90024-164

EXPLORATION SUMMARY

In 1957 and 1958 Hudson Bay Exploration and Development Company, Limited performed an EM (Loop-Frame equipment) survey. Conductors delineated by this survey were drilled in 1958 (A.F. 90488). In 1981 an airborne EM (INPUT) and magnetic survey was performed for BP Minerals Limited, followed by a geological mapping programme (A.F. 92828).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 160-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by intermediate hornblende and biotite gneiss (unit W5d). Mafic tectonite (unit W6b) containing mafic to felsic intrusive sheets occurs to the east. These rocks are associated with the West Reed-North Star shear zone (unit W5d) (Syme *et al.*, 1995a, b). Despite the intense ductile deformation that the rocks in this area have undergone, Norquay *et al.* (1992, 1994a, b) were able to define the depositional character of some of these units. The occurrence area is underlain by amphibolite with abundant epidote±quartz lenses. A quartz-rich amphibolite occurs to the east. Thin felsic arenitic rocks occur as discontinuous, tectonically attenuated, units within this part of the stratigraphy. Mafic intrusions(?) are also present.

Hole E-13 intersected a sequence of amphibole-plagioclase±sericite±biotite±graphite "gneisses" with massive, unfoliated intervals (A.F. 90488), similar to the rocks exposed in outcrop.

MINERALIZATION

Mineralized intervals were intersected in hole E-13 as follows (A.F. 90488) (see table below).

Interval	Mineralization
30.2-30.9 m (99.0-101.4 ft.)	"mineralized to well mineralized" pyrite, pyrrhotite, in siliceous amphibole-plagioclase-sericite "gneiss"
40.3-41.2 m (132.2-135.2 ft.)	"well mineralized" pyrite, possibly graphitic, in fine-grained amphibole-plagioclase-biotite-sericite "gneiss"
46.0-46.2 m (151.0-151.6 ft.)	"near solid" pyrite, in fine-grained amphibole-plagioclase-sericite-biotite "gneiss"
47.2-47.7 m (155.0-156.4 ft.)	"well mineralized" pyrite, in amphibole-plagioclase "gneiss"

GEOCHEMICAL DATA

No assays were reported in the assessment file for these mineralized intervals.

CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation.

REFERENCES

A.F. 90488 and 92828; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Norquay, L.I., Prouse, D.E., Heine, T.H. and Gale, G.H.

1992: Geological investigations in the North Star Lake area (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1992, pp. 23-27.

Norquay, L.I., Prouse, D.E., and Gale, G.H.

1994a: The North Star Lake project (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1994, pp. 83-84.

1994b: North Star Lake (NTS 63K/15NE1); Cancelled Assessment File, Manitoba Industry, Trade and Mines, Minerals Division, Preliminary Map 1994S-2, 1:10 000.

Syme, E.C., Bailes, A.H. and Lucas, S.B.

1995a: Geology of the Reed Lake area (Parts of 63K/9 and 10); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1995, pp. 42-60.

1995b: Geology of the Reed Lake area (Parts of 63K/9 and 10); in Manitoba Energy and Mines, Minerals Division, Preliminary Map 1995F-1, 1:50 000.

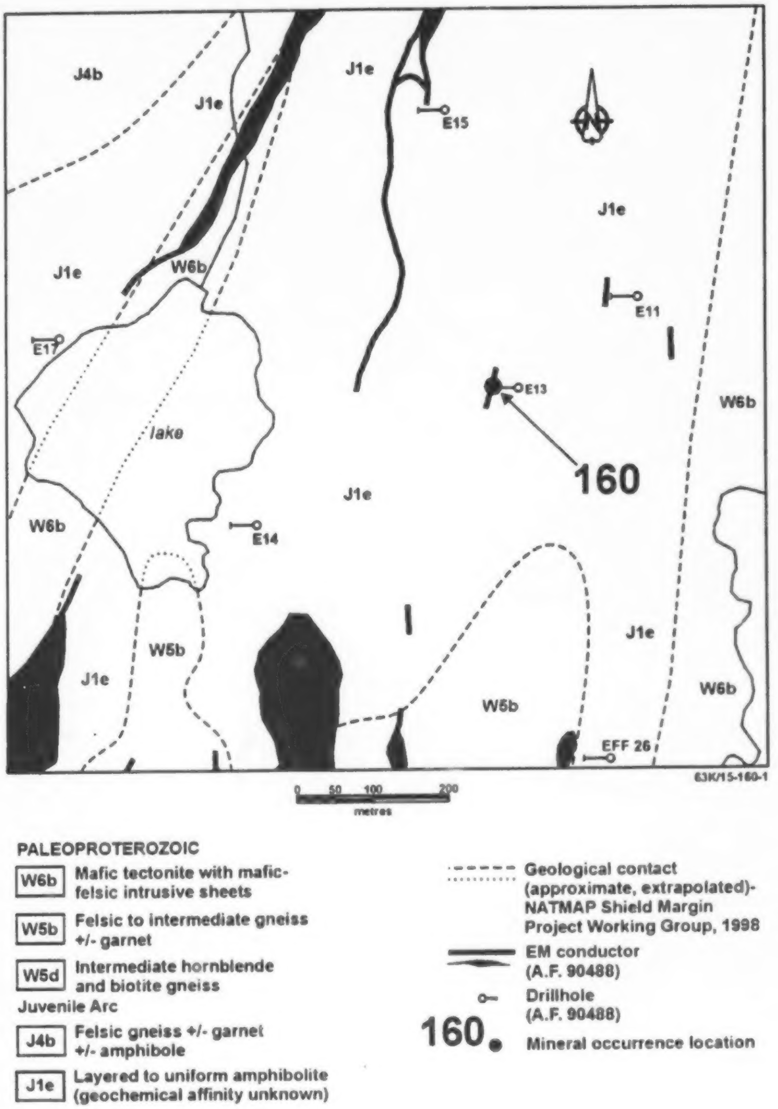

J4b
J1e
J1e
J1e
J1e
J1e
J1e
J1e
W6b
W6b
W6b
W6b
W5b
W5b
lake
E15
E11
E17
E13
E14
EFF 26
160
0 50 100 200
metres
63K/15-160-1
PALEOPROTEROZOIC
W6b Mafic tectonite with mafic-felsic intrusive sheets
W5b Felsic to intermediate gneiss +/- garnet
W5d Intermediate hornblende and biotite gneiss
Juvenile Arc
J4b Felsic gneiss +/- garnet +/- amphibole
J1e Layered to uniform amphibolite (geochemical affinity unknown)
Geological contact (approximate, extrapolated)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 90488)
Drillhole (A.F. 90488)
160 Mineral occurrence location

Figure 160-1: Geological setting of occurrence 160.

LOCATION: 161

NAME: mineralization intersected by diamond drilling
UTM: 399390E, 6085335N
AREA: approximately 6.1 km N of North Star Lake
ACCESS: via bush aircraft to North Star Lake, by boat along stream north of North Star Lake, then traverse
AIRPHOTO: MB90024-165

EXPLORATION SUMMARY

In 1957 and 1958 Hudson Bay Exploration and Development Company, Limited performed an EM (Loop-Frame equipment) survey. Conductors delineated by this survey were drilled in 1958 (A.F. 90488). In 1981 an airborne EM (INPUT) and magnetic survey was performed for BP Minerals Limited, followed by a geological mapping programme (A.F. 92828).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 161-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by intermediate hornblende and biotite gneiss (unit W5d). These rocks are associated with the West Reed-North Star shear zone (Syme *et al.*, 1995a, b). Despite the intense ductile deformation that the rocks in this area have undergone, Norquay *et al.* (1994a, b) were able to define the depositional character of some of these units. The occurrence area is underlain by feldspar-porphyroblastic amphibolite. Thin felsic arenitic rocks occur as discontinuous, tectonically attenuated, units within this part of the stratigraphy. Mafic intrusions(?) are also present.

Hole E-14 intersected amphibole-plagioclase±quartz ±garnet±biotite "gneisses", parts of which are siliceous (A.F. 90488).

MINERALIZATION

Several thin intervals containing "near solid" pyrrhotite and pyrite with trace quantities of sphalerite were intersected between 47.5-52.5 m (155.9-172.3 ft.) in hole E-14 (A.F. 90488). The total thickness of the sulphide-rich intervals is 1.2 m (4.1 ft.). The host rock is fine-grained, siliceous garnet-amphibole-quartz-biotite "gneiss".

GEOCHEMICAL DATA

No assays were reported in the assessment file for these mineralized intervals.

CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation.

REFERENCES

A.F. 90488 and 92828; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Norquay, L.I., Prouse, D.E., and Gale, G.H.

1994a: The North Star Lake project (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1994, pp. 83-84.

1994b: North Star Lake (NTS 63K/15NE1); Cancelled Assessment File, Manitoba Industry, Trade and Mines, Minerals Division, Preliminary Map 1994S-2, 1:10 000.

Syme, E.C., Bailes, A.H. and Lucas, S.B.

1995a: Geology of the Reed Lake area (Parts of 63K/9 and 10); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1995, pp. 42-60.

1995b: Geology of the Reed Lake area (Parts of 63K/9 and 10); in Manitoba Energy and Mines, Minerals Division, Preliminary Map 1995F-1, 1:50 000.

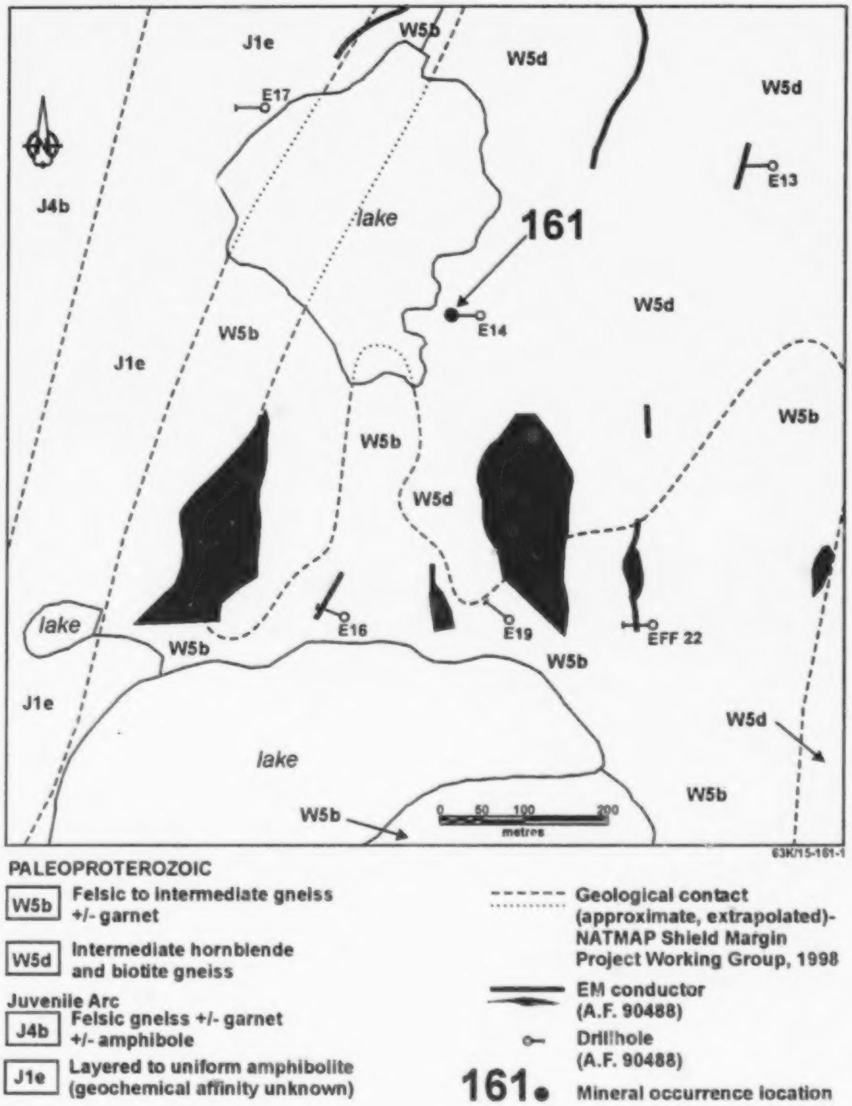

J1e
W5b
W5d
W5d
E17
J4b
E13
lake
161
E14
W5d
W5b
J1e
W5b
W5b
W5d
lake
E16
E19
EFF 22
W5b
W5b
J1e
W5d
lake
W5b
W5b
0 50 100 200
metres
63K/15-161-1
PALEOPROTEROZOIC
W5b Felsic to intermediate gneiss +/- garnet
W5d Intermediate hornblende and biotite gneiss
Juvenile Arc
J4b Felsic gneiss +/- garnet +/- amphibole
J1e Layered to uniform amphibolite (geochemical affinity unknown)
Geological contact (approximate, extrapolated)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 90488)
Drillhole (A.F. 90488)
161 Mineral occurrence location

Figure 161-1: Geological setting of occurrence 161.

LOCATION: 162

NAME: mineralization intersected by diamond drilling
UTM: 398600E, 6084685N
AREA: approximately 5.9 km N of North Star Lake
ACCESS: via bush aircraft to North Star Lake, by boat along stream north of North Star Lake, then traverse
AIRPHOTO: MB90024-165

EXPLORATION SUMMARY

In 1957 and 1958 Hudson Bay Exploration and Development Company, Limited performed an EM (Loop-Frame equipment) survey. Conductors delineated by this survey were drilled in 1958 (A.F. 90488). In 1981 an airborne EM (INPUT) and magnetic survey was performed for BP Minerals Limited, followed by a geological mapping programme (A.F. 92828).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 162-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by an assemblage of intermediate to mafic metavolcanic and metasedimentary rocks. Quartz-rich amphibolite with epidote lenses is a common constituent. This unit is bounded to the west and east by felsic flows (unit J4b) of the Lower and Upper rhyolite, respectively (Norquay *et al.*, 1994a, b).

Hole EFF-23 intersected garnetiferous "andesite" and amphibole-plagioclase-garnet±biotite± chlorite±magnetite schistose "gneisses" (A.F. 90488).

MINERALIZATION

An interval that is "mineralized to well mineralized" with pyrrhotite and containing minor quantities of chalcopyrite and sphalerite was intersected in hole EFF-23 between 45.3-55.5 m (148.6-182.1 ft.) (A.F. 90488). Individual mineralized areas are less than 1 m thick. The host rocks are a mixed sequence of amphibole-garnet-biotite-chlorite schist and biotite-chlorite schist with garnet-amphibole-quartz-chlorite±magnetite schist intervals.

GEOCHEMICAL DATA

One sample collected between 52.2-52.4 m (171.1-171.9 ft.) returned 0.26% Cu, 0.5% Zn, tr Au and nil Ag (A.F. 90488).

CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation.

REFERENCES

A.F. 90488 and 92828; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Norquay, L.I., Prouse, D.E., and Gale, G.H.

1994a: The North Star Lake project (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1994, pp. 83-84.

1994b: North Star Lake (NTS 63K/15NE1); Cancelled Assessment File, Manitoba Industry, Trade and Mines, Minerals Division, Preliminary Map 1994S-2, 1:10 000.

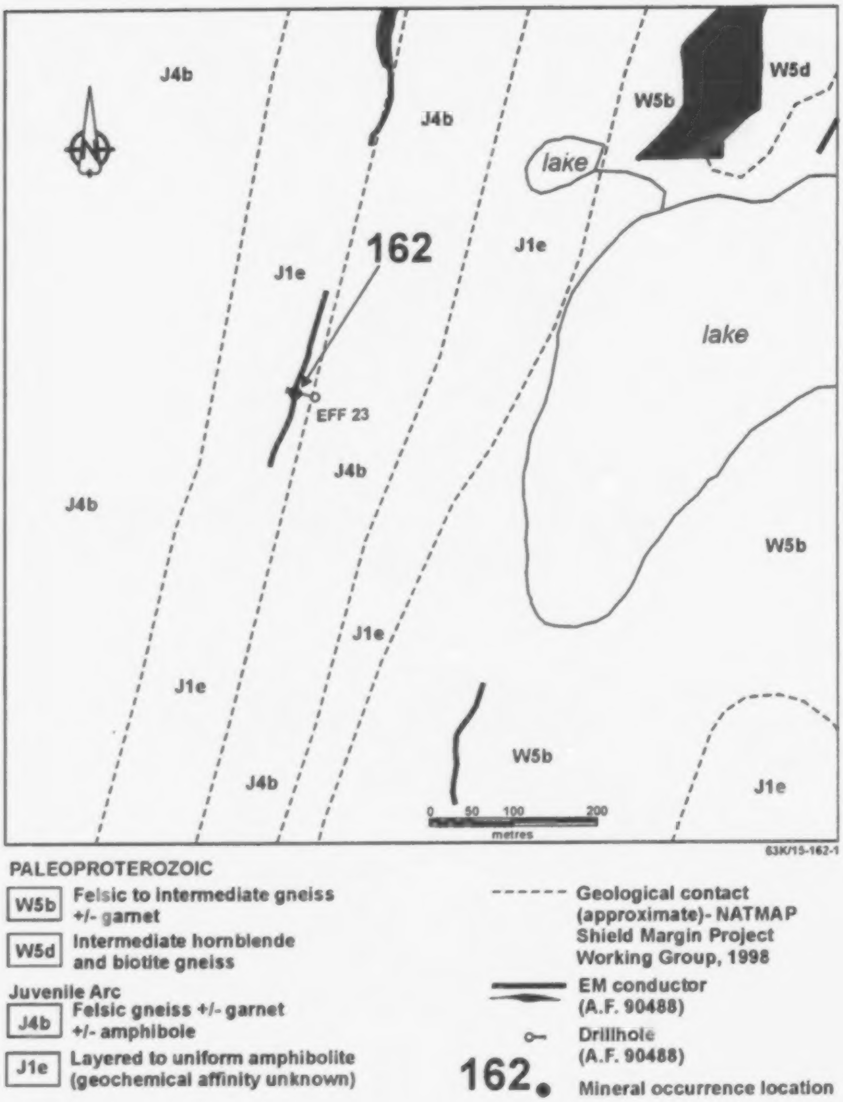

J4b
J4b
W5d
W5b
lake
162
J1e
J1e
lake
EFF 23
J4b
J4b
W5b
J1e
J1e
W5b
J4b
J1e
0 50 100 200
metres
63K/15-162-1
PALEOPROTEROZOIC
W5b Felsic to intermediate gneiss +/- garnet
W5d Intermediate hornblende and biotite gneiss
Juvenile Arc
J4b Felsic gneiss +/- garnet +/- amphibole
J1e Layered to uniform amphibolite (geochemical affinity unknown)
Geological contact (approximate)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 90488)
Drillhole (A.F. 90488)
162 Mineral occurrence location

Figure 162-1: Geological setting of occurrence 162.

LOCATION: 163

NAME: mineralization intersected by diamond drilling
UTM: 399230E, 6084985N
AREA: approximately 5.7 km N of North Star Lake
ACCESS: via bush aircraft to North Star Lake, by boat along stream north of North Star Lake, then traverse
AIRPHOTO: MB90024-165

EXPLORATION SUMMARY

In 1957 and 1958 Hudson Bay Exploration and Development Company, Limited performed an EM (Loop-Frame equipment) survey. Conductors delineated by this survey were drilled in 1958 (A.F. 90488). In 1981 an airborne EM (INPUT) and magnetic survey was performed for BP Minerals Limited, followed by a geological mapping programme (A.F. 92828).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 163-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by a sequence of folded felsic to intermediate gneisses (unit W5b) and intermediate hornblende-biotite gneisses (unit W5d). These rocks lie adjacent to the West Reed North Star shear zone (Syme *et al.*, 1995a, b), a major kilometres thick tectonite that has been traced for more than 25 km from the Dow Lake area southward to the Phanerozoic cover. Despite the intense deformation that the rocks within and adjacent to this shear zone have been subjected to, Norquay *et al.* (1994a, b) were able to define the pre-deformational character of some of the affected units. The occurrence area is underlain by felsic sandstone that is conglomeratic in part.

The sequence intersected by hole E-16 consists of fine-grained garnet-amphibole-plagioclase±sericite±graphite "gneisses", garnetiferous "andesite" and diorite (A.F. 90488).

MINERALIZATION

Mineralized intervals were intersected in hole E-16 as follows (A.F. 90488) (see table below).

Interval	Mineralization
29.9-70.4 m (98.0-231.1 ft.)	mostly "near solid" pyrrhotite, pyrite, minor graphite, minor chalcopyrite, sphalerite, in fine-grained plagioclase-amphibole "gneiss"
91.5-94.7 m (300.1-310.6 ft.)	"well mineralized" pyrrhotite, in slightly chloritic diorite
105.1-114.3 m (344.7-375.0 ft.)	several intervals "near solid" pyrrhotite, minor pyrite, minor chalcopyrite, sphalerite, in siliceous, sericitic diorite with graphite laminae
118.7-121.6 m (389.5-399.1 ft.)	"near solid" pyrite, pyrrhotite, minor sphalerite, in coarse, banded, garnetiferous "andesite" with graphitic laminae
125.6-128.8 m (412.0-422.5 ft.)	"near solid" pyrite, pyrrhotite, minor sphalerite, in coarse, banded, garnetiferous "andesite" with graphitic laminae
148.3-148.5 m (486.4-487.2 ft.)	"near solid" pyrite, pyrrhotite, minor sphalerite, in coarse, banded, garnetiferous "andesite" with graphitic laminae
151.5-172.5 m (497.0-565.8 ft.)	"near solid" pyrite, pyrrhotite, with graphitic laminae in fine-grained "quartz gangue" (rhyolite?)
176.4-177.2 m (578.6-581.3 ft.)	"near solid" pyrrhotite, minor pyrite, minor chalcopyrite, sphalerite, in siliceous amphibole-plagioclase-garnet-biotite-sericite±graphite(?) "gneiss"
183.2-185.2 m (601.0-607.5 ft.)	"near solid" pyrrhotite, minor pyrite, minor chalcopyrite, sphalerite, in siliceous amphibole-plagioclase-garnet-biotite-sericite±graphite(?) "gneiss"
189.6-190.2 m (622.2-623.9 ft.)	"near solid" pyrrhotite, minor pyrite, minor chalcopyrite, sphalerite, in siliceous amphibole-plagioclase-garnet-biotite-sericite±graphite(?) "gneiss"
192.1-192.7 m (630.2-632.2 ft.)	"near solid" pyrrhotite, minor pyrite, minor chalcopyrite, sphalerite, in siliceous amphibole-plagioclase-garnet-biotite-sericite±graphite(?) "gneiss"
192.9-193.1 m (632.9-633.4 ft.)	"near solid" pyrrhotite, minor pyrite, minor chalcopyrite, sphalerite, siliceous amphibole-plagioclase-garnet-biotite-sericite±graphite(?) "gneiss"
193.4-195.0 m (634.6-639.6 ft.)	"near solid" pyrrhotite, minor pyrite, minor chalcopyrite, sphalerite, in siliceous amphibole-plagioclase-garnet-biotite-sericite±graphite(?) "gneiss"
196.0-196.4 m (643.0-644.3 ft.)	"near solid" pyrrhotite, minor pyrite, minor chalcopyrite, sphalerite, in siliceous amphibole-plagioclase-garnet-biotite-sericite ±graphite(?) "gneiss"
198.2-199.0 m (650.3-652.8 ft.)	"near solid" pyrrhotite, minor pyrite, minor chalcopyrite, sphalerite, in siliceous amphibole-plagioclase-garnet-biotite-sericite±graphite(?) "gneiss"
248.1-248.7 m (813.9-815.9 ft.)	"mineralized" with pyrite, pyrrhotite, in amphibole-plagioclase-garnet "gneiss"
250.4-250.6 m (821.6-822.2 ft.)	"mineralized" with pyrite, pyrrhotite, in amphibole-plagioclase-garnet "gneiss"
266.6-267.1 m (874.6-876.3 ft.)	"near solid" pyrrhotite, minor sphalerite, in fine-grained amphibole-plagioclase-garnet "gneiss"
270.0-277.7 m (885.8-911.1 ft.)	"well mineralized" to "near solid" pyrrhotite, minor pyrite, graphite, minor sphalerite, chalcopyrite, in fine-grained quartz (rhyolite?), amphibolitic intervals

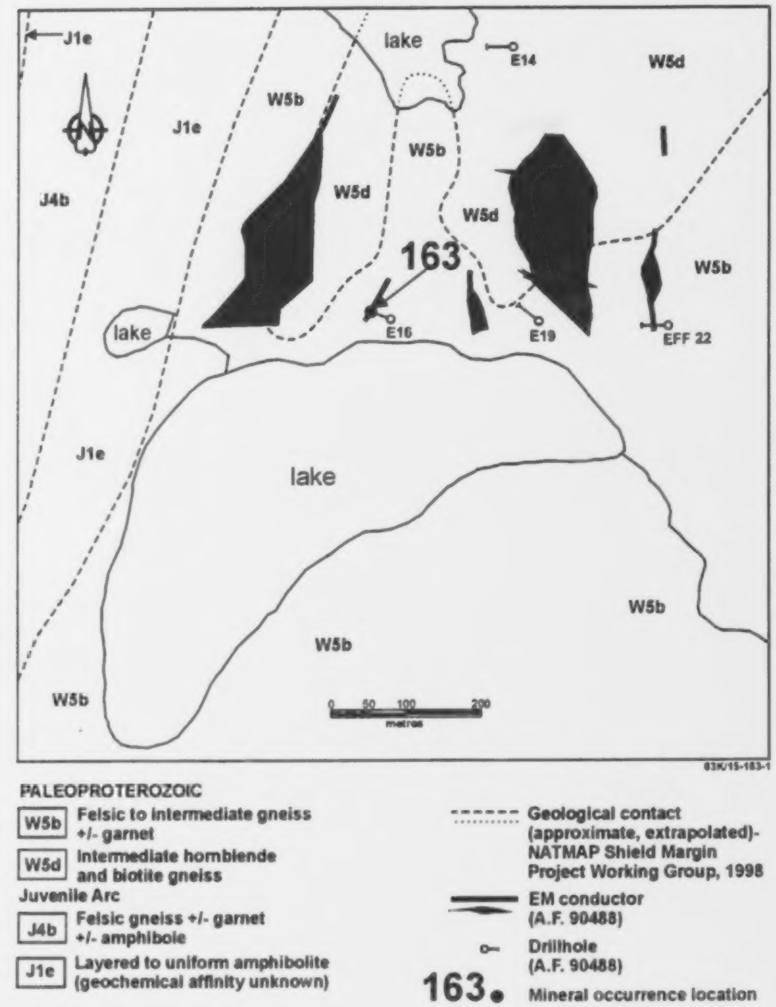

J1e
lake
E14
W5d
W5b
J1e
J4b
W5d
W5b
W5d
163
W5b
lake
E16
E19
EFF 22
J1e
lake
W5b
W5b
W5b
0 50 100 200
metres
63K/15-163-1
PALEOPROTEROZOIC
W5b Felsic to intermediate gneiss +/- garnet
W5d Intermediate hornblende and biotite gneiss
Juvenile Arc
J4b Felsic gneiss +/- garnet +/- amphibole
J1e Layered to uniform amphibolite (geochemical affinity unknown)
Geological contact (approximate, extrapolated)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 90488)
Drillhole (A.F. 90488)
163 Mineral occurrence location

Figure 163-1: Geological setting of occurrence 163.

GEOCHEMICAL DATA

No assays were reported in the assessment file for these mineralized intervals.

CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation.

REFERENCES

A.F. 90488 and 92828; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Norquay, L.I., Prouse, D.E., and Gale, G.H.

1994a: The North Star Lake project (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1994, pp. 83-84.

1994b: North Star Lake (NTS 63K/15NE1); Cancelled Assessment File, Manitoba Industry, Trade and Mines, Minerals Division, Preliminary Map 1994S-2, 1:10 000.

Syme, E.C., Bailes, A.H. and Lucas, S.B.

1995a: Geology of the Reed Lake area (Parts of 63K/9 and 10); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1995, pp. 42-60.

1995b: Geology of the Reed Lake area (Parts of 63K/9 and 10); Manitoba Energy and Mines, Minerals Division, Preliminary Map 1995F-1, 1:50 000.

LOCATION: 164

NAME: mineralization intersected by diamond drilling
UTM: 399430E, 6084975N
AREA: approximately 5.7 km N of North Star Lake
ACCESS: via bush aircraft to North Star Lake, by boat along stream north of North Star Lake, then traverse
AIRPHOTO: MB90024-165

EXPLORATION SUMMARY

In 1957 and 1958 Hudson Bay Exploration and Development Company, Limited performed an EM (Loop-Frame equipment) survey. Conductors delineated by this survey were drilled in 1958 (A.F. 90488). In 1981 an airborne EM (INPUT) and magnetic survey was performed for BP Minerals Limited, followed by a geological mapping programme (A.F. 92828).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 164-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by a sequence of folded felsic to intermediate gneisses (unit W5b) and intermediate hornblende-biotite gneisses (unit W5d). These rocks lie adjacent to the West Reed North Star shear zone (Syme *et al.*, 1995a, b), a major kilometres thick tectonite that has been traced for more than 25 km from the Dow Lake area southward to the Phanerozoic cover. Despite the intense deformation that the rocks within and adjacent to this shear zone have been subjected to, Norquay *et al.* (1994a, b) were able to define the pre-deformational character of some of the affected units. The occurrence area is underlain by felsic sandstone with conglomeratic intervals. This sequence has been intruded (?) by a fine-grained mafic rock that is garnetiferous in part.

Hole E-19 intersected a sequence of "andesites" with fine-grained amphibole-garnet "gneiss" equivalents, intercalated with quartz-phyric rhyolitic flows and fragmental units (A.F. 90488).

MINERALIZATION

Mineralized intervals were intersected in hole E-19 as follows (A.F. 90488) (see table below).

Interval	Mineralization
4.1-5.1 m (13.3-16.8 ft.)	"well mineralized" to "near solid" pyrite, graphitic, slight pyrrhotite, in rhyolite porphyry
6.0-6.7 m (19.6-22.0 ft.)	"well mineralized" to "near solid" pyrite, graphitic, slight pyrrhotite, in rhyolite porphyry
37.2-37.6 m (122.1-123.3 ft.)	"well mineralized" pyrrhotite, graphitic, minor pyrite, in quartz- and fragmental rhyolite
39.5-39.7 m (129.5-130.4 ft.)	"well mineralized" pyrrhotite, graphitic, minor pyrite, in quartz-phyric and fragmental rhyolite
51.7-64.7 m (169.7-212.2 ft.)	"near solid" intervals pyrrhotite, pyrite, graphitic, trace chalcopyrite, sphalerite, in quartz-phyric rhyolite
72.8-73.5 m (238.8-241.3 ft.)	"well mineralized" to "near solid" pyrrhotite, minor pyrite, graphitic, trace chalcopyrite, sphalerite, in rhyolite porphyry
74.3-76.8 m (243.7-252.0 ft.)	"well mineralized" to "near solid" pyrrhotite, minor pyrite, graphitic, trace chalcopyrite, sphalerite, in rhyolite porphyry
102.9-103.2 m (337.5-338.7 ft.)	"near solid" pyrrhotite, minor pyrite, graphitic, trace chalcopyrite, in quartz-phyric and fragmental rhyolite
117.6-118.2 m (385.7-387.8 ft.)	"near solid" pyrrhotite, minor pyrite, graphitic, trace chalcopyrite, in quartz-phyric and fragmental rhyolite
118.6-119.2 m (389.0-391.1 ft.)	"near solid" pyrrhotite, minor pyrite, graphitic, trace chalcopyrite, in quartz-phyric and fragmental rhyolite
122.5-122.7 m (401.9-402.7 ft.)	"near solid" pyrrhotite, minor pyrite, graphitic, trace chalcopyrite, in quartz-phyric and fragmental rhyolite
127.9-128.1 m (419.5-420.4 ft.)	"near solid" pyrrhotite, minor pyrite, graphitic, trace chalcopyrite, in quartz-phyric and fragmental rhyolite
132.4-134.2 m (434.3-440.3 ft.)	"near solid" pyrrhotite, minor pyrite, graphitic, trace chalcopyrite, in quartz-phyric and fragmental rhyolite

GEOCHEMICAL DATA

No assays were reported for these mineralized intervals in the assessment file.

CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation.

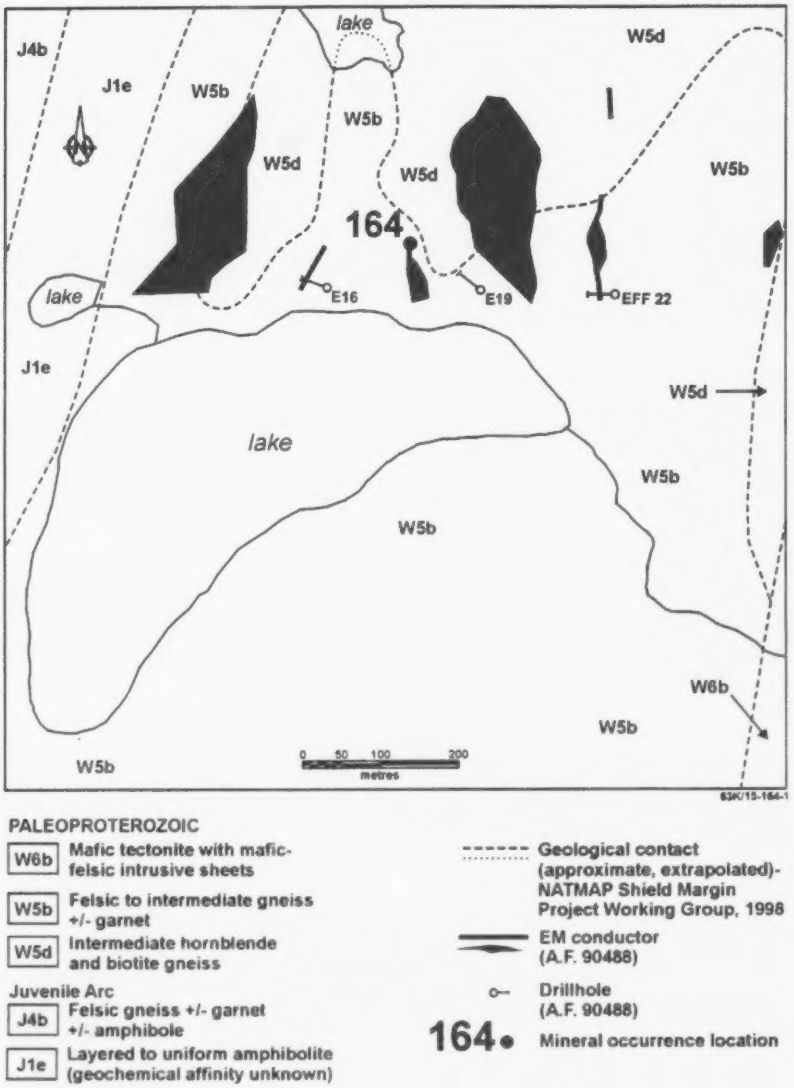

J4b
J1e
W5b
lake
W5d
W5b
W5d
W5d
W5b
164
E16
E19
EFF 22
lake
J1e
W5d
lake
W5b
W5b
W6b
W5b
W5b
0 50 100 200
metres
63K/15-164-1
PALEOPROTEROZOIC
W6b Mafic tectonite with mafic-felsic intrusive sheets
W5b Felsic to intermediate gneiss +/- garnet
W5d Intermediate hornblende and biotite gneiss
Juvenile Arc
J4b Felsic gneiss +/- garnet +/- amphibole
J1e Layered to uniform amphibolite (geochemical affinity unknown)
Geological contact (approximate, extrapolated)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 90488)
Drillhole (A.F. 90488)
164● Mineral occurrence location

Figure 164-1: Geological setting of occurrence 164.

REFERENCES

A.F. 90488 and 92828; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Norquay, L.I., Prouse, D.E., and Gale, G.H.

1994a: The North Star Lake project (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1994, pp. 83-84.

1994b: North Star Lake (NTS 63K/15NE1); Cancelled Assessment File, Manitoba Industry, Trade and Mines, Minerals Division, Preliminary Map 1994S-2, 1:10 000.

Syme, E.C., Bailes, A.H. and Lucas, S.B.

1995a: Geology of the Reed Lake area (Parts of 63K/9 and 10); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1995, pp. 42-60.

1995b: Geology of the Reed Lake area (Parts of 63K/9 and 10); Manitoba Energy and Mines, Minerals Division, Preliminary Map 1995F-1, 1:50 000.

LOCATION: 165

NAME: mineralization intersected by diamond drilling
UTM: 399600E, 6084975N
AREA: approximately 5.7 km N of North Star Lake
ACCESS: via bush aircraft to North Star Lake, by boat along stream north of North Star Lake, then traverse
AIRPHOTO: MB90024-165

EXPLORATION SUMMARY

In 1957 and 1958 Hudson Bay Exploration and Development Company, Limited performed an EM (Loop-Frame equipment) survey. Conductors delineated by this survey were drilled in 1958 (A.F. 90488). In 1981 an airborne EM (INPUT) and magnetic survey was performed for BP Minerals Limited, followed by a geological mapping programme (A.F. 92828).

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 165-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by a sequence of folded felsic to intermediate gneisses (unit W5b) and intermediate hornblende-biotite gneisses (unit W5d). These rocks lie adjacent to the West Reed North Star shear zone (Syme *et al.*, 1995a, b), a major kilometres thick tectonite that has been traced for more than 25 km from the Dow Lake area southward to the Phanerozoic cover. Despite the intense deformation that the rocks within and adjacent to this shear zone have been subjected to, Norquay *et al.* (1994a, b) were able to define the pre-deformational character of some of the affected units. The rocks at the occurrence consist of mafic and felsic conglomerate.

The sequence intersected by hole EFF-22 is dominated by quartz-phyric rhyolite, parts of which are fragmental (A.F. 90488). Diorite and amphibole-plagioclase-phyric dykes, and fine-grained quartz-biotite-garnet±amphibole "gneiss" are minor constituents of the assemblage.

MINERALIZATION

All the sulphide mineralization intersected by hole EFF-22 at this occurrence is closely associated with felsic volcanic units, and occurs over the following intervals (A.F. 90488) (see table below).

Interval	Mineralization
17.3-151.9 m (56.7-498.4 ft.)	many sections "well mineralized" to "near solid" pyrrhotite, pyrite, graphitic, trace chalcopyrite, sphalerite, in porphyritic, partly sericitic massive and fragmental rhyolite
151.9-181.2 m (498.4-594.4 ft.)	mostly "near solid" pyrrhotite, pyrite, graphitic, trace chalcopyrite, sphalerite, in banded fragmental rhyolite
193.7-211.5 m (635.4-694.0 ft.)	many sections "near solid" pyrrhotite, pyrite, graphitic, trace chalcopyrite, sphalerite, in massive and fragmental rhyolite

GEOCHEMICAL DATA

No assays were reported in the assessment file for these mineralized intervals.

CLASSIFICATION

Chemical-sediment type deposit; sulphide facies iron formation. The presence of graphite suggests a biogenic contribution.

REFERENCES

A.F. 90488 and 92828; Cancelled Assessment Files, Manitoba Industry, Trade and Mines, Minerals Division.

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Norquay, L.I., Prouse, D.E., and Gale, G.H.

1994a: The North Star Lake project (NTS 63K/15); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1994, pp. 83-84.

1994b: North Star Lake (NTS 63K/15NE1); Cancelled Assessment File, Manitoba Industry, Trade and Mines, Minerals Division, Preliminary Map 1994S-2, 1:10 000.

Syme, E.C., Bailes, A.H. and Lucas, S.B.

1995a: Geology of the Reed Lake area (Parts of 63K/9 and 10); in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1995, pp. 42-60.

1995b: Geology of the Reed Lake area (Parts of 63K/9 and 10); Manitoba Energy and Mines, Minerals Division, Preliminary Map 1995F-1, 1:50 000.

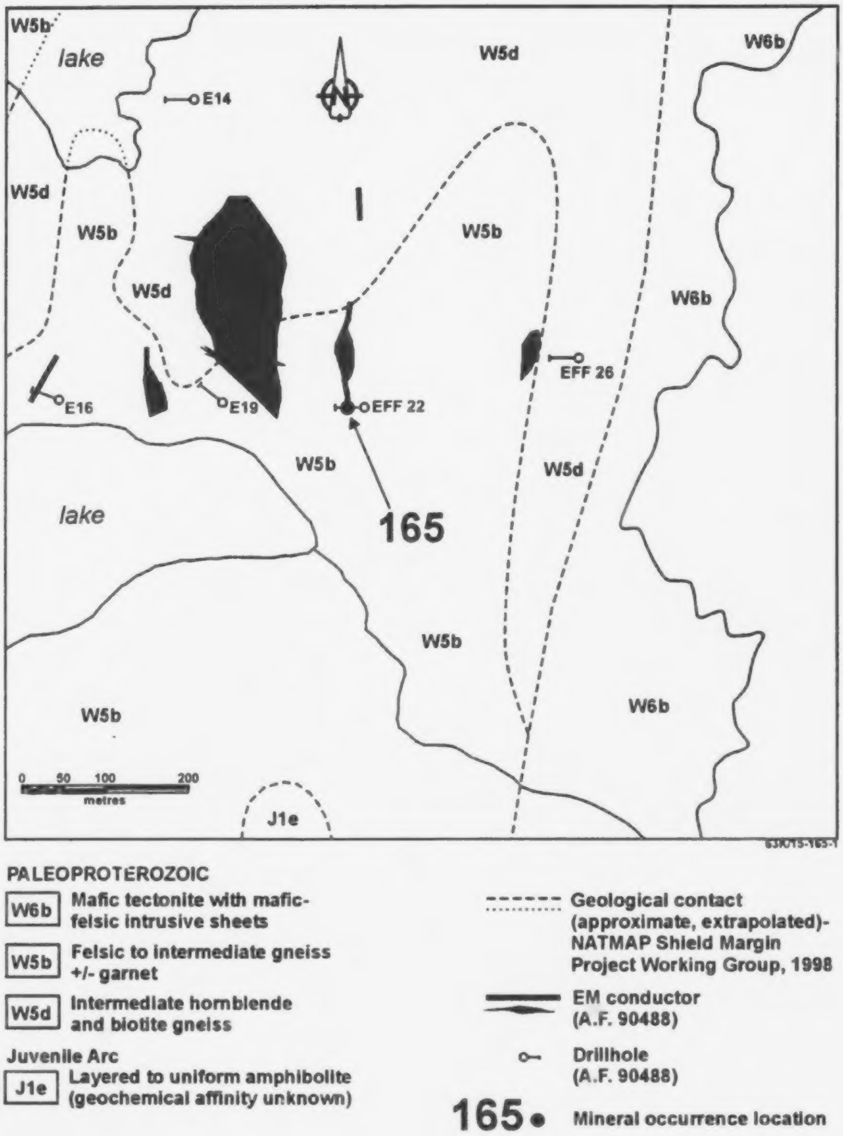

W5b
lake
E14
W5d
W6b
W5d
W5b
W5b
W5d
W6b
E16
E19
EFF 22
EFF 26
W5b
W5d
lake
165
W5b
W5b
W6b
0 50 100 200
metres
J1e
63K/15-165-1
PALEOPROTEROZOIC
W6b Mafic tectonite with mafic-felsic intrusive sheets
W5b Felsic to intermediate gneiss +/- garnet
W5d Intermediate hornblende and biotite gneiss
Juvenile Arc
J1e Layered to uniform amphibolite (geochemical affinity unknown)
Geological contact (approximate, extrapolated)-NATMAP Shield Margin Project Working Group, 1998
EM conductor (A.F. 90488)
Drillhole (A.F. 90488)
165 Mineral occurrence location

Figure 165-1: Geological setting of occurrence 165.

LOCATION: 166

NAME: North Claw; mineralization intersected by diamond drilling
UTM: 386790E, 6075165N
AREA: under west side of east channel, Claw Lake
ACCESS: via bush aircraft to Claw Lake
AIRPHOTO: MB90026-137

EXPLORATION SUMMARY

The following information was obtained from the WWW (2002). Aur Resources Inc. provided the information contained at this site. In 1975, Manitoba Mineral Resources completed HLEM surveys and two drill holes totaling 104.3 m. Airborne EM and magnetic surveys, followed by ground HLEM surveys were performed by Granges Inc. 1983-84. Drilling in the area commenced in 1985 and continued intermittently to 1994 with 37 holes completed totaling 5049.8 m. The North Claw occurrence (Claw Lake North Cu Zone) was discovered in 1985. Magnetic, HLEM and TEM surveys carried out in 1993 delineated numerous untested geophysical features. Aur Resources Inc. completed 8 holes (2095.6 m) in 1996, of which two targeted the North Claw occurrence. A parallel footwall (?) zone was discovered proximal to the North Claw mineralization. The geophysical target for the North Claw occurrence is a 500 m long HLEM/TEM anomaly.

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 166-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by Claw Bay pillowed and massive basalt and diabase (unit F1b). Tonalite (unit P6a) and xenolith-rich granodiorite (unit P7c), most likely related to the Elbow Lake Pluton, occur to the west of the occurrence. A mafic phyllonite (unit W6c), part of the Claw Lake shear zone, underlies Claw Lake to the east.

The rocks associated with the mineralization consist of fragmental rhyolitic units within the basalts. Geochemical investigations indicate that the basalts that underlie the occurrence area were erupted in an ocean floor/back arc environment (Syme, 1992). Geochemical work on the sequence intersected in drill holes indicates that the rocks associated with the occurrence consist of felsic to mafic volcanic rocks with back-arc to fore-arc characteristics (D. Dudek, pers. comm., 2001).

MINERALIZATION

The mineralization in hole R-97-3 consists of 1% pyrite, pyrrhotite and chalcopyrite in chlorite schist. Hole R-97-5 intersected a chloritic amphibolite containing 12% pyrite and 2% chalcopyrite. Hole R-97-6 intersected 2 mineralized intervals. They consist of chloritic amphibolite with 25% pyrrhotite, 15% pyrite and a trace of chalcopyrite followed by a chlorite-garnet alteration zone (D. Dudek, pers. comm., 2002). The sulphide zone is open along strike and down dip.

GEOCHEMICAL DATA

The following assays were obtained from holes that intersected North Claw occurrence mineralization (WWW, 2002; D. Dudek, pers. comm., 2002) (see table below).

Hole No.	Zone	Core Length	%Cu	%Zn	g Ag/t	g Au/t
RAD-48	North Claw Cu zone	3.36 m	2.72	0.28	5.9	0.31
RAD-41	North Claw Cu zone	7.00 m	1.69	0.08	4.9	0.30
RAD-19	North Claw Cu zone	1.49 m	5.46	1.15	18.5	0.68
R-97-3	North Claw Cu zone (?)	2.00 m	0.17	0.22	5.6	<0.01
R-97-5	#2 zone	1.00 m	0.89	0.10	5.6	0.08
R-97-6	#2 zone	1.00 m	0.23	0.43	4.6	0.40

CLASSIFICATION

Stratabound massive sulphide type deposit; volcanic rock associated. Chalcopyrite and sulphides occur as stringers within chloritic rock. This may represent an associated alteration zone.

REFERENCES

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Syme, E.C.

1992: Elbow Lake project – Part A: Supracrustal rocks; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1992, p. 32-46

WWW

2002: World Wide Web site http://www.gov.mb.ca/itm/mrd/busdev/properties/pdf/vms-properties.pdf

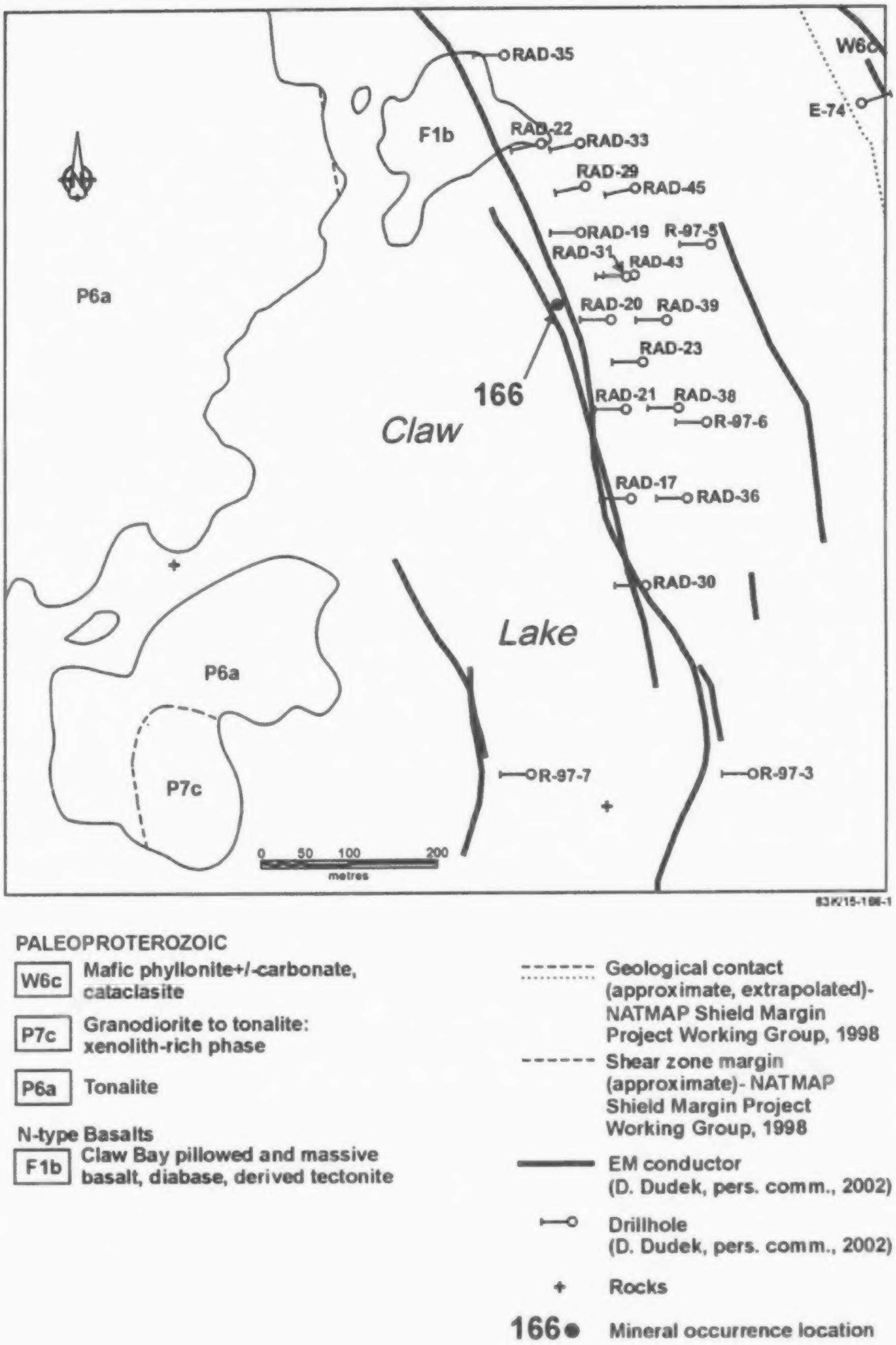

W6c
E-74
RAD-35
F1b
RAD-22
RAD-33
RAD-29
RAD-45
RAD-19
R-97-5
RAD-31
RAD-43
P6a
RAD-20
RAD-39
RAD-23
166
RAD-21
RAD-38
R-97-6
Claw
RAD-17
RAD-36
RAD-30
Lake
P6a
P7c
R-97-7
R-97-3
0 50 100 200
metres
83K/15-166-1
PALEOPROTEROZOIC
W6c Mafic phyllonite+/-carbonate, cataclasite
P7c Granodiorite to tonalite: xenolith-rich phase
P6a Tonalite
N-type Basalts
F1b Claw Bay pillowed and massive basalt, diabase, derived tectonite
Geological contact (approximate, extrapolated)- NATMAP Shield Margin Project Working Group, 1998
Shear zone margin (approximate)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (D. Dudek, pers. comm., 2002)
Drillhole (D. Dudek, pers. comm., 2002)
Rocks
166 Mineral occurrence location

Figure 166-1: Geological setting of North Claw occurrence.

LOCATION: 167

NAME: South Claw; mineralization intersected by diamond drilling
UTM: 386650E, 6072950N
AREA: under west side of east channel, Claw Lake
ACCESS: via bush aircraft to Claw Lake
AIRPHOTO: MB90026-136

EXPLORATION SUMMARY

The following information was obtained from the WWW (2002). Aur Resources Inc. provided the information contained at this site. In 1975, Manitoba Mineral Resources completed HLEM surveys and two drill holes totaling 104.3 m. Airborne EM and magnetic surveys, followed by ground HLEM surveys were performed by Granges Inc. 1983-84. Drilling in the area commenced in 1985 and continued intermittently to 1994 with 37 holes completed totaling 5049.8 m. The South Claw occurrence (Claw Lake South Cu Zone) was discovered in 1986. Magnetic, HLEM and TEM surveys carried out in 1993 delineated numerous untested geophysical features. Aur Resources Inc. completed 8 holes (2095.6 m) in 1996, of which one targeted the South Claw occurrence. This drilling extended the mineralization at this occurrence down-plunge.

GEOLOGICAL SETTING

The geological unit designations indicated on the geological setting map (Fig. 167-1) and their descriptions are from the compilation maps of the NATMAP Shield Margin Project Working Group (1998). The area is underlain by Claw Bay pillowed and massive basalt and diabase (unit F1b) and xenolith-rich granodiorite (unit P7c). Tonalite (unit P6a) , most likely related to the Elbow Lake Pluton, occurs to the NW of the occurrence. Poorly- to well-layered gabbro, gabbro pegmatite, leucogabbro and anorthosite (units F6a and F6c) occur to the south and west of the occurrence. The gabbroic rocks are part of the Claw Lake gabbro complex (Syme, 1992). A mafic phyllonite (unit W6c), part of the Claw Lake shear zone, underlies Claw Lake to the east.

MINERALIZATION

The mineralization consists of stringer chalcopyrite in a chlorite matrix. This rock contains 2-4% magnetite crystals (D. Dudek, pers. comm., 2002). The sulphide zone is open along strike and down dip.

GEOCHEMICAL DATA

The following assays were obtained from holes that intersected North Claw occurrence mineralization (WWW, 2002) (see table below).

Hole No.	Zone	Core Length	%Cu	%Zn	g Ag/t	g Au/t
RAD-34	South Claw Cu zone	3.7 m	1.46	0.19	5.4	0.90
RAD-40	South Claw Cu zone	0.9 m	3.70	0.14	4.8	0.12
R-97-4	South Claw Cu zone	4.7 m	1.49	0.06	7.8	0.06

CLASSIFICATION

Stratabound massive sulphide type deposit; volcanic rock associated. Chalcopyrite occurs as stringers within chloritic rock. This may represent an associated alteration zone.

REFERENCES

NATMAP Shield Margin Project Working Group

1998: Geology, NATMAP Shield Margin Project Area (Flin Flon Belt), Manitoba-Saskatchewan; Geological Survey of Canada 1968A; Manitoba Energy and Mines Map A-98-2, Sheets 1 to 7; Saskatchewan Energy and Mines Map 258A-2, scale 1:100 000.

Syme, E.C.

1992: Elbow Lake project – Part A: Supracrustal rocks; in Manitoba Energy and Mines, Minerals Division, Report of Activities, 1992, p. 32-46

WWW

2002: World Wide Web site http://www.gov.mb.ca/itm/mrd/busdev/properties/pdf/vms-properties.pdf

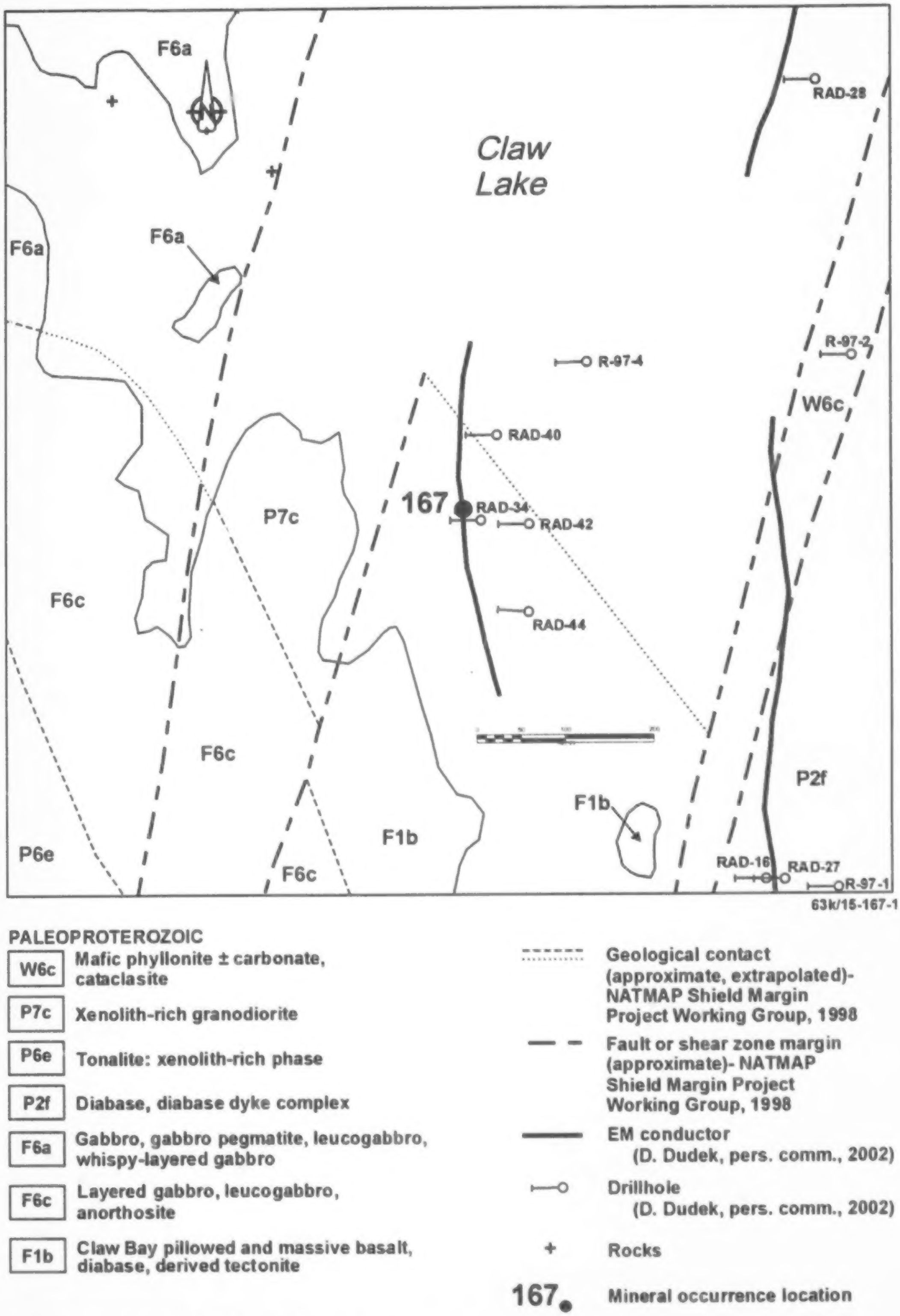

F6a
Claw
Lake
RAD-28
F6a
F6a
R-97-4
R-97-2
W6c
RAD-40
167
RAD-34
RAD-42
P7c
F6c
RAD-44
F6c
P2f
F1b
F1b
P6e
F6c
RAD-16
RAD-27
R-97-1
63k/15-167-1
PALEOPROTEROZOIC
W6c Mafic phyllonite ± carbonate, cataclasite
P7c Xenolith-rich granodiorite
P6e Tonalite: xenolith-rich phase
P2f Diabase, diabase dyke complex
F6a Gabbro, gabbro pegmatite, leucogabbro, whispy-layered gabbro
F6c Layered gabbro, leucogabbro, anorthosite
F1b Claw Bay pillowed and massive basalt, diabase, derived tectonite
Geological contact (approximate, extrapolated)- NATMAP Shield Margin Project Working Group, 1998
Fault or shear zone margin (approximate)- NATMAP Shield Margin Project Working Group, 1998
EM conductor (D. Dudek, pers. comm., 2002)
Drillhole (D. Dudek, pers. comm., 2002)
+ Rocks
167 Mineral occurrence location

Figure 167-1: Geological setting of South Claw occurrence.

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